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"I cannot help plead to my countrymen, at every opportunity, to cherish all that is manly and noble in the military profession, because Peace is enervating and no man is wise enough to foretell when soldiers may be in demand again."—SHERMAN.

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MILITARY SANITATION IN THE 16TH, 17TH AND
18TH CENTURIES.

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PART I.—THE SIXTEENTH CENTURY.

The Siege of Metz, 1552.

THE 16th century was eminently one of sieges, from which date the origin of modern fortifications. In the preceding century the proportion of sieges to battles was nearly as 1 to 1; in the 16th, as 2 to 1; and in the 17th, about 4 to 3. Political, economical or strategic reasons may be given for these differences, but underlying them will be found a sufficient explanation in the history of the development of fire-arms. The ramparts of a town became the best defensive armor against the gradually increasing number and effectiveness of arquebuses and cumbersome pieces of siege guns, few of which could be brought into action in the field on account of the crude means of transportation. It is true that the smaller fire-arms were not in general use until the following century. As late as 1553 the lance was the favored weapon of the French, the pike of the Swiss, the two-hand sword of the Poles, bows of the English, sword and poignard of the Italians, halberd of the Germans, pistols of the Danes, and arquebuses of the Spaniards. Yet one-third of the entire force of 40,000 fighting men, gathered by Henry II. of France, March, 1552, to

invade Germany, possessed arquebuses, and Montluc relates the equipment, in the same year, of twenty men of each company with arquebuses that carried 400 paces from point to point.* Field artillery was comparatively rare during the whole of this period. Rabutin, who details the armament of Henry's army, mentions forty-three cannon, nearly all siege guns. On the other hand, cities of any importance were provided with large cannon, and as these were eventually opposed by artillery of similar calibre, more numerous because made more movable, further means of defense were invented, which proved a temporary advantage over besieging armies in the first years of the 17th century.

Forts and arms, however, did not always determine the result. Famine and disease were just as fatal.† Knowledge of the means of prevention of epidemics and of precautions against their spread was very extensive in this century. Municipal and royal ordinances regulating the police of cities in time of peace were very common.‡

The application of them in a besieged town by military authority ought to have been easy, yet the memoirs of the time are full of recitals of suffering and destruction due to their neglect. There was excuse for the absence of sanitary measures from armies in the field, in their transitory character, lack or weakness of medical organization, and general ignorance of the subject as affected by the changed condition of living.§ Hence the dissipation of

*One fourth of the remainder of Henry's army had pistols, and from 1200 to 1500 mounted *harquebusiers* had guns three feet long, slung to the saddle-bows. Slings, long disused, were said to carry from 500 to 600 paces, and ancient Roman machines 700 yards; crossbows killed point blank at from 40 to 50 yards, elevated at from 120 to 160 yards.

†Of 57 besieged towns 24 were carried by assault, 20 capitulated and 13 were relieved or the siege abandoned.

‡The *Archives curieuses de l'histoire de France depuis Louis XI—Louis XVIII.*, par L. Cimber, Paris, 1834, contain (9th vol. 1st series) a valuable and interesting document on the subject, by Claude de Rubys, being the history of the pest in Lyons, 1577.

§I can find only one treatise on hygiene specially, printed in the 16th century,—Anton Schneebberger, *De bona militum valetudine conservanda*, 1564, a copy of which is in the Library of the Surgeon-General's office,—and a chapter in a surgical work by N. Godin, 1558. Occasional orders enjoining cleanliness were issued, presumably after their necessity became manifest; thus, the statute of the English Henry V. in the early 15th century, at Maas, and one of Henry VIII., in 1544, prohibiting "carrion, filth, or other unwholesome or infectious, stinking thing to be near lodgings, and the same to be buried." Altogether there were printed, mostly after Parc's first edition, 45 works or parts, on military surgery by both physicians and surgeons, most of whom had field experience,—1 on military pharmacy, and 11 on various military diseases.

armies was frequent, on account of the want of food, the appearance of disease and consequent desertions.

The gallant array of Henry II. met with this fate in less than four months, although it encountered no serious military obstacle, nor fought a single battle. Its historian says that the camp followers outnumbered the troops proper, a common occurrence of those days, and together with the soldiers loaded the wagons with plunder from abandoned houses, thus causing disorder and famine in the camp. Summer approaching, on account of the great heat some started to march at 2 A. M., and remained on horseback until noon before they were lodged;—the foot soldiers generally began the march first so as to reach their destination at the same time, and were overcome by thirst; they eagerly filled themselves with cold water and many “fell into great diseases, pleurisies and fevers,” a large number dying. Toul, Metz and Verdun were the trophies, but France was exhausted when it became known in July that the Emperor Charles V. was collecting a force to recapture these places.

Among the Emperor's many inheritances from his predecessor, Maximilian I., not the least were regulations for military organization and discipline, so that his armies were considered in these respects the best in Europe. Leonhard Fronsperger in 1555 wrote a work on Imperial courts-martial, etc., in which are found sanitary dispositions for the *landesknechte*. It is not known how far or often these were carried out, but it has been justly said, by Froelich, that the instructions for physicians and surgeons are the origin and basis of the present medical regulations of the German army, because no such existed in Germany before, and because there is so great a resemblance between them and those of to-day;—indeed, the latter are very little better than those that an enlightened past had brought to a high grade of perfection. Another authority* asserts that Charles drew physicians and surgeons from all sides for his campaigns, and that, not satisfied with garrison hospitals, he instituted field hospitals, following the example of his grandmother, Isabella of Spain.

The custom in camp was to send the sick and wounded to the baggage train, where they were cared for in tents by the physician or barber and nursed by women, who then constituted a

*L. Thomas, *Lectures sur l'histoire de la médecine*, Paris, 1885. He mentions particularly the celebrated anatomist Vesalius and a distinguished Spanish surgeon, Daça Chacon.

large following of armies. On breaking camp the light sick were transported in wagons and the dangerously sick sent to hospitals in the nearest towns. The *landesknechte* selected from among their number and paid in common a *spital meister*, or hospital superintendent, who looked after their sick in hospital or on the march, providing necessities and waiting on the physician, barber and women. The meanest duties were performed by women and children.

A field physician-in-chief and a field-barber were attached to the staff of the commanding officer of each *Hauffen*,—5000 to 10,000 infantrymen; a physician to the field-marshal of cavalry, and a field-barber and assistant to the chief of artillery. All of these had rank and pay assimilated to superior officials. To each independent troop, each infantry company—about 200 men, and each squadron was assigned a field-barber. His place during battle when not in the ranks, was with the rear guard, and he ranked between clerk and halberdier, according to Fronsperger, after the quartermaster sergeant and before a corporal, according to others. He received a salary and could charge a soldier for special services.

"The physician-in-chief must have been a doctor, or one who had recently charge of surgeons or field-barbers by State authority; he must be a well-known, skilful, experienced and cautious man, of the proper age, upon whom all barbers, cutlers, wounded, sick and stricken could rely for help and counsel in time of need, particularly when they are shot, cut, bruised or broken, or are suffering from any accidental or disabling diseases, such as scalds, fluxes, fevers, and similar affections that occur among soldiers. His duties are even more extensive in that he should inspect, both when the regiment is organized and later at monthly muster, the instruments and everything pertaining thereto, and when he finds anything lacking or lost, such shall be charged to the field-barber, to make up the deficit. When this cannot be done, he shall find other means to meet emergencies. On the march he will closely attend his commanding officer. When exigency or peril impends from the enemy, in battle array or skirmishes and such like, he shall remain in the neighborhood of his superior military officer;—but he will also oversee as much as possible the other physicians, surgeons and the like, wherever wounded, etc., are to be attended, and he shall devote his care, advice and skill to all others, particularly because he, above

others, is ready with instruments, apothecaries and medicines for both internal and external wounds and sickness.

" He should also with all diligence, advise whether a leg, arm or such should be amputated or preserved by other means. Further, he should give his attention to the severely wounded, that they may not be left too long on the lines or in the companies, but immediately carried to the surgeons and aided by beneficial dressings. On the march, when it becomes important to have a field-barber near at hand or available, it is his business to see that one is stationed between the cavalry and infantry, with his instruments. On other occasions, in camp and quarters, each barber remains with the troop in which he has been assigned for duty. Whenever a question arises between barbers and cured soldiers or others, as to the payment to be made, he shall settle it, seeing that neither too much nor too little is given.

" As it is necessary that a field-barber or surgeon serve with each troop, so should each Captain be careful to select a well-versed, skilful, experienced and trained man, and not a poor beard-shaver or bath-boy as often happens by reason of favor; thus, the killing or maiming of good soldiers may be prevented. The field-barber should be supplied with all necessary medicines and instruments in a field wagon, and the Captain should see that it is done. He should be a capable *knecht*, to help in necessity. His duty is to render assistance first, when there is need, to those of his own troop, not to exact too much from anyone, but to treat men at reasonable and like rates. He shall have his lodging at night at the company pennant, so that he may be found in necessity, and it is best that one barber should be accessible to each lodging house, on account of the sick and wounded. He shall serve with his troop in all else like an ordinary soldier, and he shall receive double pay."

The greater part of the Imperial army on this occasion consisted of *landesknechte*,* 14 regiments of 143 bands or companies,

* Salignac says they were levied in the manner and numbers of the Germans, and that the companies were not complete, coming recently from their country. It was the custom to enlist *knechts* by voluntary engagement for the war only;—fixed pay was agreed upon, and they were permitted to pillage and demand ransom. There arose from this *condottieri*, who had at their call bodies of men, of varying numbers according to the price paid, which were placed at the disposition of princes about to engage in war. There was no medical examination of a recruit, and when a *knecht* was permanently disabled, he dragged himself to his home as best he could.

and it is presumed that some such medical organization obtained among them, for Fronsperger speaks of it as well known, not as having been recently introduced ; and in 1557 at the siege of St. Quentin, an analogous arrangement of medical officers for the English ordnance existed, evidently copied from Maximilian's, and usually cited by English authors as the first attempt at the formation of a regular medical staff. The remainder of 120,000 men was made up of 27 Spanish companies, 16 Italian, more than 10,000 cavalry and 7000 pioneers. There were 140 pieces of artillery. This army was said to have been larger, by 15,000 men, than any army gathered by Charles, and twice as large as any army collected under one chief afterwards for more than one hundred years. There is no record of a medical organization other than the German, but it is probable that a surgical service existed among the Spanish troops, such being mentioned in 1554 with Daça Chacon as head, and among the Italians, who employed surgeons for campaigns as early as the 13th century, and combined them in bodies for sieges in the previous century and even before.

To meet this formidable array the Duke of Guise and other nobles occupied Metz, and formed and drilled in guard exercises 12 companies, in all 4500 to 4600 foot, 444 horse, and 920 gensdarmes in 3 companies.

The military student ought to read Salignac for the particulars of preparation for defense made by the active genius of this young man, with very inadequate means ;—the repairs to the fortifications with the aid of women and children, making serviceable old and badly cast cannons, construction of powder mills, razing of suburban gardens, pleasure resorts, mills, etc. ; the storing of grains and provisions, purchasing in his own credit animals, salt meats, fish, butter, oil, salt, cheese, rice, etc., enough to last a year* purging the city of superfluous persons and things, retain-

*Pare's list is curious : biscuit, fresh beef, salt veal, bacon, saveloy, Mayence-hams ; salt fish, as cod, marline, salmon, shad, tunny, anchovy, sardines, herring ; also peas, beans, rice, garlic, onions, prunes, cheeses, butter, oil and salt ; pepper, ginger, cardamon and other spices " to put in our pastries, the principal ingredient of which was horse meat, and these would have tasted badly without them." Turnips, carrots, leeks, etc., were buried in the gardens and reserved for extreme necessity. Sir James Turner furnishes even a larger list of articles to be provided for an English army in the field in Elizabeth's time, including, besides, almonds, chestnuts and hazelnuts, honey and tobacco ! The ordinary daily ration was 2 lbs. of bread, 1 lb. of flesh, or, in lieu of it, 1 lb. of cheese, 1 bottle of wine or 2 of beer. An ensign got 4 rations, a colonel 12. " ' It is enough,' cry the soldiers, ' we desire no more.' It is enough in

ing and organizing 1200 artisans, including carpenters, masons and blacksmiths to help in the ramparts and artillery, and armorers, farriers, bakers, shoemakers and hosiers, a limited number of the most expert and best provided with materials to meet the necessities of the soldiers ;—the means of defense adopted in the event of breaches, or in case the walls were taken ; the rules for the effective guard of the walls, for cavalry raids in large parties, (100 to 120 men) and in small (20 to 30 men) on the enemy's supply trains, for ambushes, for the interior police defining the relation of citizen and soldier, the duties of the former during an alarm of fire, etc., and of the latter to suppress disorder at any hour.

Rabutin visited Metz after the siege was raised, and inspected the numerous contrivances hastily made to meet every step of the enemy's advance. He also speaks of them somewhat in detail, and in the most admiring terms, especially of the pyrotechnical inventions of M. de St. Remy, who was among the besieged.

The energy and foresight of Guise did not stop here. Some soldiers of Rodemar, who had joined the garrison before the city was invested, were taken sick with a contagious disease ;—they were at once isolated, and after having been mustered, were ordered to rejoin the camp of M. de Chatillon, their colonel. To the surgeon barbers of the city he advanced money to provide themselves with means to treat wounds. The pioneers, under the provost, were ordered to clean the city often, horses and carts being supplied, to throw carrion and all other filth out of the city, and to keep the streets always clean. When a soldier was wounded or taken sick, especially during the night watch or work that had to be done in the rain or extreme cold, it was ordered that he be carried at once to the hospital and then treated with everything necessary ; and the pioneers, when taken sick or wounded while engaged on the ramparts, were to be sent to another hospital.

The siege began October 20th, but the defense was so well conducted that a breach was not effected before November 26th, by means of a constant battery of 40 double cannons for many days. It was as large as a front of fifty men. The besiegers found behind it another new and stronger rampart. The weather

conscience ;—but this allowance will not last very long ;—they must be contented to march sometimes one whole week and scarce get two pounds of bread all the while, and the officers as little as they."

now became so cold that sentries were found frozen stiff, lance in hand. The wounded in both armies, partly on this account, did not do well. Some of the imperial officers became dissatisfied with the treatment and sent many of their disabled soldiers to springs of their native country. A quack appeared in one of the three besieging camps, named Doublet, who met with such success by the use of simple water dressing that his fame spread.* After the manner of the time Guise suspected poison in the drugs used in the city, and sent a message to the king, November 8th, requesting a new supply. Ambrose Paré was intrusted with the commission, and repairing to Verdun, was smuggled into the city, himself, an assistant and a medical outfit, at midnight on December 8th, by an Italian captain, whose services were purchased by 1500 *écus*, an easy matter, it appears, since the Emperor had failed to keep his promises of payment.

Paré's reception and presentation by Guise to the princes and officers on the breach are historical, and his recital of his labors and observations is classical.

From his account and other sources it is learned that at this period in France, at least, surgeons, like physicians, in armies were not obliged to attend the soldiers. A few men of considerable merit were attached to the persons of captains or nobles, whom they followed, and upon whom they depended. Pierre Aubert, in his capacity of surgeon, thus served the Duke of Guise. When a campaign ended, usually in autumn, they passed the winter in the cities, in the pursuit of their customary civil practice. However, royal ordinances were beginning to be issued establishing more uniformity. In 1550 Coligny inspired a decree respecting infantry, which was remarkable in that it created in each company a surgeon, who was to take care of its sick and wounded in garrisons and campaign; his pay was not to come from the royal treasury, but from a tax on the sum total of the pay of the company. The company baker, one to each company, was paid in the same way.

The obstinacy and cleverness of Guise irritated the Emperor into an expressed determination to capture the city by force or famine at the cost of his entire army. This becoming known, it was ordered that no one in the city should eat fresh fish or venison or game birds, for fear that they might be pestiferous. The

*Frequent mention is made in those days of charlatans following in the train of an army to practice on soldiers who had been abandoned by their comrades.

prescribed rations must suffice, and they were carefully distributed by weight and measure according to the quality of the persons. At first each soldier received two pints of wine and two loaves of bread, each of 12 ounces ;—from these were gradually taken $\frac{1}{2}$ and $\frac{1}{2}$ ounce. Paré says that the rations were diminished in such a manner that what had been given to three was divided among four persons, and it was forbidden to sell or barter any remnants.

During the siege prisoners were treated with unusual consideration.* The Emperor learning from some of his own soldiers returned from the city on parole, the extreme measures taken by Guise, watered his wine, as Paré puts it. His battery of forty-five days had not advanced and his mines had all been successfully met by countermines. The intensely cold weather persisted and was the cause of crowding in the tents, huts and holes dug in the ground and covered with stubble. Food became scarce ; the surrounding country, having been previously devastated by Henry's expedition and by Guise's orders, furnished no resources, and much of the imperial supplies had been ruined by rain and snow. Clothing was so scarce, by reason of raids on the trains, that the greater part of the soldiers were barefoot. In consequence, congelations, dysentery and scurvy were soon followed by typhus fever, and the mortality became frightful. The least estimate places the loss in the imperial army from all causes at 20,000 men.

On the sixty-fifth day, December 26th, the retreat was ordered and begun. It was done so hurriedly and covered so badly by the Marquis Albert of Brandenburg that some dead were left unburied and many sick and wounded were abandoned in their tents. Still, part of the disabled were carried away in carts, but the roads having been made impassable by the advance of cavalry and heavy cannon, a number of them were left at a neighboring abbey. To these Guise sent provisions and ordered Paré and several other surgeons to attend to their wants. A sallying party came across a number of sick Spaniards in wagons and let them pass unmolested. Considering these circumstances Guise departed from the custom of setting fire to the camps ; he collected all the sick and sent more than three hundred to the hospital in the city, where many lost limbs by amputation ; he ordered that

* At the siege of Metz in 1444, according to Mathieu de Coussy, the besieged amused themselves by drowning the prisoners, and the besieging French followed the example, both parties disdaining ransom.

all be fed and treated, and he buried the dead. After a few days he sent a trumpet to Alva, the imperial general, promising safe conduct to such persons as he might send to care for and carry the sick and wounded prisoners to Thionville, the objective point of the retreat, stating that he would gladly supply them with well covered boats for the purpose. Alva sent wagons and carts, but not enough, and Guise supplied the deficiency. Most remarkable of all, the imperial general asked that a sick Spanish officer of his command be permitted to enter the city for treatment, and the request was granted. The demoralization of the defeated army was so great, that the French cart drivers, on their return, found the roads filled with the dead bodies of those who, before expiring, had been thrown there by the Spanish teamsters, who remarked that they were not paid to carry dead men.

The clemency of Guise proved a disaster, which would have been averted had the same precaution been taken as at the beginning of the siege. No serious disease had been in the city during the siege;—once it was raised, the importation of prisoners created an epidemic of typhus, which spread to the adjoining villages.

The defense of Metz became the marvel of Europe;—it, without doubt, saved France from destruction, and, in many ways, besides political, its effects were lasting. Wounded soldiers were afterwards better treated, as at the siege of Thionville, 1558, and after the capture of Havre, 1563, when the project of an *Invalides* originated with the queen mother, though it was not carried out for many years. The humanity of Guise towards both well and sick was remembered at the siege of Therouanne, 1553, by the Spanish, who, on being reminded of it by the French, courteously saved all prisoners, says Brantôme. After this the custom of massacring prisoners who were not reserved for ransom, gradually declined, and this was the germ from which arose the spirit that culminated, in a little over 300 years, in the articles of the Geneva Convention.

It was noteworthy also in the preparations made for it, other than purely military, of food, medicines, hospitals;—in the organization of artisans and surgeons; in the police and guard regulations and precautions against disease. The first suggestion of transporting wounded soldiers in numbers by water was made here. It was the first occasion when the services of the "father of modern surgery" were universally recognized in an army, by

soldiers as well as officers, services that, in the following year, rendered his opinion of such importance, that he was called in the council of war to determine whether Hesdin should be surrendered. Only a few months before it, at the siege of Damvilliers, Paré first tied an artery after amputation, discarding the cautery. On his return to Paris from Metz, he was appointed surgeon to the King, the highest position he could covet, and about this time his surgical discoveries began to spread throughout Europe.

PRINCIPAL AUTHORITIES.

Salignac. *Le siège de Metz par l'empereur Charles V. en l'an 1552.* Carloix, *Mémoires sur Vielleville.* Rabutin, *Commentaires des dernières guerres en la Gaule Belgique.* Bourdeille, abbé de Brantôme, *Vies des grandes capitaines, etc.* Paré, *Apologie et voyages.* Fronsperger, *Von kayserlichen Kriegsgerichten, Malefitz und Schuldhandler, etc.* Froelich, *Geschichte des König. Sächs. Sanitätskorps.* Montluc, *Commentaires.*

PART II.—THE SEVENTEENTH CENTURY.

The last Campaign of Gustavus Adolphus.

Sully, the great Minister of Henry IV., under date of 1604, wrote in his Memoirs: "It is difficult to conceive that, in a nation, which from its establishment has been engaged in war and has indeed pursued no other trade than that of arms, no care should have been hitherto taken to form and methodize them. Whatever related to the soldiery of France was offensive and disgusting; the foot soldiers were enlisted by violence and made to march by a cudgel; their pay was unjustly withheld; they heard of nothing but a prison and had nothing before their eyes but a gibbet; their treatment drew them into all methods of desertion, which was prevented only by the *prevôts*, who kept them in the camp like men besieged; the officers themselves being ill-paid had some kind of right to violence and plunder. * * * The regulation (prompt payment) was followed by another equally just and equally proper to reconcile the mind to the trade of arms; by this there was a provision made for the relief of soldiers who, by wounds or sickness contracted in the service, were unable to live either by war or labor; things were managed so that in their state of misery they wanted nothing either for their maintenance or care."

By the establishment of the *Maison royale de la Charité Chrétienne* in 1600, the *droit d'oblat* was practically abolished. In

virtue of this right the kings attached disabled and aged officers and soldiers to convents as lay brothers, who rendered service by ringing the bells and sweeping the chambers. It had been exercised since the beginning of the Carlovingian race (752-987). The conception of a house in common for infirm soldiers is older than Sully's institution. Philip Augustus of France (1165-1223), St. Louis in 1260, the charter of the *chevaliers de l'Etoile* in 1352, contemplated it; Mary of England left a provision in her will, 1558, for such a retreat, but no attention was paid to it, and the mother of Henry III. of France in 1563 promised it. Many private individuals followed the example, among them Sir Thomas Coningsby, who founded a relief for worn-out soldiers in Hereford in 1614. The *Maison* decayed insensibly under Louis XIII., a pension of 100 livres was substituted in place of the *oblat*, and after another ineffectual attempt by the organization of the Commandery of St. Louis in 1633, the *Invalides*, proposed in 1659, was finally started in 1676. In England Chelsea was foreshadowed by the fourth of the Articles for his Majesty's Guard, 1663, and commenced operations in 1682; Kilmainham in Ireland in 1693, and Greenwich for seamen in 1695.

From remote antiquity disarmed and maimed soldiers excited general commiseration and were provided for in various ways, by pensions, assignment of lands, etc. The reasons for founding asylums for them are obvious and are often mentioned; economy, repression of beggary and control of vices that were especially prevalent among discharged mercenaries.* No permanent means were taken, however, other than civil hospitals, to preserve the soldièr temporarily disabled in active service, or in time of peace, until enlistment became universally established for a period longer than the duration of a war, and when officers became irremovable and dependent on the sovereign; until a regular royal military service was organized having greater cohesion, better discipline and administrative departments, than were possessed

* In the time of Henry II. and Francis II. disabled soldiers and widows went to Fontainebleau to demand, not pensions, for these were not yet in vogue, but assistance. The cardinal Minister Claude de Lorraine, for an answer, caused to be trumpeted that those who came to seek relief must leave in twenty-four hours, under pain of being hanged, and he actually had a gibbet erected for the purpose under the window of the king himself. (Audouin, *Histoire de l'administration de la guerre*.)

It was found during the reign of Louis XIII. that the soldiers dissipated their pension and lived in misery the rest of the time. (*Histoire de l'hôtel des Invalides, in Archives curieuses etc., par Danjon, 2d series.*)

by the so-called standing armies before the 17th century. For France, Richelieu is credited with the first system of sedentary hospitals on the frontier near the scene of war, at Pignerol,* (1630) for the army in Italy. They were all placed directly under the superintendence of a *chirurgien-major des camps et armées*, the first appearance of this title. Other nations,—Austria, Prussia, Denmark and Sweden,—continued to furnish treatment for sick and wounded soldiers in quarters and tents, exceptionally in civil hospitals, until the middle of the 18th century. The persistence of regimental hospitals in England and America to the beginning of the present century, is a relic of the company methods of the 16th century. Permanent, or garrison, and port, or naval, hospitals soon followed the sedentary in France (probably an outcome of epidemics,) but nowhere else, and were prominent among the military reforms of Louvois undertaken with the aid of Martinet and Dumetz, and dating from 1666, Vauban designating places for hospitals in all the captured towns of Alsace and Flanders, which he fortified.

The crude field system of the 16th century was limited to the company infirmary with the occasional help of civil hospitals. Sully's establishment at the siege of Amiens, 1597, was an improvement on this, but was not, as has been stated, the first ambulance hospital.† It had more of the character of a field hospital, was supported by a tax on sutlers, tavern-keepers, haberdashers, tailors and shoemakers in the train of the army, and was so well directed by Pigray, a pupil of Paré and the king's physician-surgeon, that officers preferred to be treated there. This was, nevertheless, the first impulse given to a change of former methods and to the development of organization, on military models, for the care of sick and wounded soldiers, whether on the field or at sieges.

Throughout Europe the condition of the soldier and officer began to improve at the beginning of the century, and with it the quality and number of surgeons; though medical attendance was not yet deemed a soldier's right or even a department of State.

In England more interest was taken in military matters gen-

* About 70 miles from Casal, the seat of the final military operations. The building was standing in 1858.

† A similar field hospital was established at the siege of Rouen, 1591, and in the same year an edict was issued taxing wines and ciders of tavern-keepers, the proceeds to be applied to the care of wounded soldiers.

erally, and officers were imported to instruct the militia, there being no standing army proper. Much confusion prevailed in sanitation. A regiment of 2200 men sent by James I., 1620, to the Palatinate, was accompanied by medical officers, but there was no allowance for medicines or hospitals in the estimates, though made by experienced officers, and, consequently, it suffered much from privation. The original plan for the expedition contemplated two physicians, two surgeons and two apothecaries on the staff of the general; one surgeon to a regiment of 1800 men with pay of captain, and one surgeon to each company of 150 men, with pay of ensign; one surgeon to the general of horse, one to each cavalry troop of 100 men, and one surgeon to the ordnance and pioneers.*

The English contingent of 12,000 foot and 200 horse to Count Mansfeld's expedition to the Netherlands, 1624, was likewise provided with surgeons, but owing to incompetency or want of supplies it lost one-half of its men from contagious diseases. The scarcity of surgeons compelled Charles I. to issue a mandate, 1628, to the Surgeon's Company to "impress sixteen able and efficient chirurgeons" for the force of 4000 men collected for the relief of Rochelle. In 1630 the Scotch troops in Sweden, 12,000 men, had four surgeons to a regiment, they being reckoned among the staff officers, who took priority over the line. About this period there was introduced in the army in Ireland the rank of physician-general, surgeon-general in the East India service, regimental surgeon in the army and surgeon's mate in the navy. As early as 1614 there was improvement in the navy, and to Woodall, originally an army surgeon, were due the assignment of surgeons to the East India ships, outfits of medicine chests, and the introduction of lime juice for the prevention and cure of scurvy. Not until 1660 do we find a purely military expression of interest in the hygiene of troops, and that by Sir James Turner. During the civil war the character of the soldiery was necessarily of a higher order than usual. In the parliamentary ranks Sydenham rose to a captaincy and subsequently became the greatest observer of medical facts of modern times. On the

* Another account describes a regiment as consisting of 13 companies, one being the colonel's; the 12 had 144 privates each, the colonel's 192; each company had a surgeon; on the regimental staff was a chief surgeon, who was also surgeon of the colonel's company; each cavalry troop had 70 cuirassiers and 30 carbineers with one surgeon.—*Colburn's United Service Magazine*, 1836, part 3.

royal side served Harvey, the discoverer of the circulation of the blood, as physician to the king, and Wiseman, the best English surgeon of his day. The proverbial conservatism of the English is nowhere shown so well as in the retention of crossbowmen in their armies, as late as 1627.

Among the Germans the soldiers of the duchy of Brandenburg (united with that of Prussia, 1611) were at first in a wretched condition. They were not provided with a commissary, and in 1620, when Brandenburg raised troops, they received the privilege of begging through the country; the peasantry were ordered to give each soldier a farthing every time he begged and a good thrashing with a stout cudgel, if he was not satisfied. The few permanent troops before 1653,—the Elector's body guard of 100 men and several companies of *landesknechte* distributed among various strongholds,—grew in that year to 52 troops of cavalry and 82 companies of infantry, and in 1656 to a force of 25,000 men. The system of company field-barbers remained; those of the infantry were equipped and armed like other soldiers, though their rank was gradually raised; they received, besides their pay, a small sum from each man, "basin-money," for shaving twice a week. Each regiment had a physician on its staff and a field-barber, who got from each soldier monthly a stipulated amount to support the regimental medicine chest; both were liable to be called by the company barbers, the physician only in severe cases.* During the first years of the century this was, likewise, the status in the Saxon army, in which nursing, by the consent of the commanding officers, was still done by camp women who accompanied the soldiers in the march, the regulation prescribing that they should be neither "lewd nor suspected." Not until 1683 was there a head to the surgical personnel, a staff physician in the *cortège* of the general, whose duty it was to look after the proper arrangement of the hospitals and superintend the barbers and apothecaries therein. There were also a staff field-barber and field-apothecary in the same body. The rank of all these is supposed, by Froelich, from their pay and rations, to have been that of ensign. The physicians and surgeons furnished their own mounts, and received forage; the apothecary was allowed six horses and two wagons. Toward the end of the century there

* Eventually a general oversight, only in time of war, was given to the physicians of the guard, thus making the organization more of a unit. These physicians were the first Prussian surgeons-general, beginning with Brandhorst.

appears a general staff surgeon, and the regimental barber's rank was then fixed among the officers, but that of the company barber was still between quartermaster sergeant and corporal. That the social and official position of medical men was then improved is shown by the fact that a captain of horse, Geheima, became physician to the Brandenburg Guard. In his capacity as an officer of the line he had observed the faults of the sanitary service, particularly manifest in the character of the field physician and subordinates and of medical supplies, and he made vigorous, but almost ineffectual, efforts to reform them. Minderer, a Bavarian, was an esteemed writer, 1620, on military medicine, including hygiene of troops and camps, and Purmann, surgeon-major in the Brandenburg army, published a celebrated treatise on military surgery in 1680. The medical organization throughout Germany, however, continued to be so poor that soldiers perished in numbers; as late as 1685-87, of 3000 men sent by Saxony to aid Venice in the Morea only 761 returned.

It is natural to infer from the number and variety of military medical institutions in France, that there was greater advancement in the quality and numbers of the personnel. Before the invention of sedentary hospitals for armies in the field, Richelieu began to improve the field hospitals, first at the siege of Rochelle, 1627, by attaching to them persons whose duty it was to distribute *bouillons* and medicines, even to those who could or would not seek their aid. There was as yet no uniformity in the assignment of physicians and surgeons,* but they became more an official part of the army. In 1638 he published an ordinance, which is considered, by Morache, as the foundation of true ambulances. Like the system adopted at the siege above mentioned it provided Jesuits and cooks to give *potages* and *bouillons* to the sick who did not want to go to the field or sedentary hospitals, and a surgeon and apothecary;—a large army was to have 4 priests, a lay brother and a cook with 5 assistants, 2 wagons with food and six sheep;—small armies, 3 priests, a cook with 3 assistants, 1 wagon and three sheep. The priests were to look after the spiritual welfare of the sick. The majority of surgeons of hospitals and regiments were members of the College of

* Thus, this year, 2 surgeons to the *Chevaux Légers*,—212 men; 1 to a company of *Mousquetaires*,—343 men; 2 surgeons and 1 physician to the guards,—4602 men; 1 physician and no surgeon to the *Suisses*,—2516 men; 1 surgeon to the *Gardes du Corps*,—145 men; many organizations had neither physician nor surgeon.

St. Côme, Paris; and Percy says that in the latter half of the century, there was no surgeon of any merit or reputation, who had not served in the armies, such service being the readiest means of obtaining employment. Instances are recorded of men from the rank of private rising to distinction in science and in medicine and surgery, notably the philosopher Descartes, whose mathematical and physical discoveries and physiological observations place him among the promoters of medical science, and Jacques Beaulieu, a famous lithotomist. Richelieu also organized the administrative departments generally,* and the details of the edicts affecting them were admirable, though experimental and not always successful in results. During the retreat, in 1635, of the army of la Valette on the Rhine, the hospitals were still unorganized and there was no transport service for the wounded. It was on this occasion that the young Turenne having, as was customary, several carts loaded with personal baggage, plate, etc., ordered the contents to be thrown away and the carts filled with wounded; he also picked up bodily a wounded soldier and tied him on his own horse, which he led to a place of shelter. The medical service excited in 1667 the personal interest of Louis XIV. so much that he sent for three of the most skilled surgeons of Paris for the army in Flanders,—Turbière, to whom was first given the title of *chirurgien-major consultant des camps et armées*, Bienaise, renowned as the most intrepid operator of the century, and Gayant, who was the first surgeon to be admitted to the Academy of Sciences.† By 1674 it had so grown and was so well managed that at the battle of Seneffe, the Intendant Robert could distribute in three villages 230 military surgeons assisted by nurses, with the necessary material to care for an exceptionally large number of

* Troops in garrison were supplied with bread in kind by a contractor, its cost being withheld from the pay. Troops on the march were supplied with larger rations at the expense of the municipalities: daily for each man, 2 pounds of bread, 1 pound of meat, salt, vinegar, and one pint of wine, fuel for light and heating, and the loan of table linen, a bowl and a glass;—forage was also to be supplied to the horses. During the campaign the system of contracts on a large scale was followed to furnish everything including transports, the contractor being represented by a *general des vivres*, who had under him a large personnel.

† Gui Patin, *Lettres*, who had no special regard for surgeons as a class, speaks of them in the highest terms, and adds that it was rumored that the king at the same time had sent for a good physician to govern the army hospitals. It was the custom then, and it lasted many years thereafter, for physicians to superintend the work of surgeons, there being the greatest distinction between the two.

wounded. In 1683 it was ordered that during a campaign the sick be lodged before the officers.

The Thirty Years' War brought Sweden into prominence as a military nation, and its most brilliant achievement was the last campaign of Gustavus Adolphus, beginning June, 1630, by the landing in Pomerania of an army of 8000 men, reinforced at first by six Scotch regiments, about 7000 men. Of this force both regiments and companies of infantry and cavalry varied in the number of men. The differences were more marked in the infantry,* but four surgeons were always among the regimental staff officers of both arms, as well as a quartermaster (ranking between major and captain), a provost (and his archers), a recorder, two chaplains, eight sutlers and a drum-major. All soldiers had swords, long swords or sabres. Two-thirds of the foot were armed with matchlock muskets, the forked rest being suppressed, and cartridge boxes instead of shoulder belts; and one-third with pikes 11 feet long, the iron part being 2 feet long and 4 inches broad at the widest part. The *cuirasseurs* had carbines and two pistols each, the dragoons, or light cavalry, light muskets and axes. Armor was then falling into disuse, because it could be easily penetrated by the heavy bullets;—the head only was specially protected by a helmet or iron cap, the jackets being of sheep-skin, excepting those of the *cuirasseurs*, who had simple breast-plates. The infantry company was in six ranks, the cavalry in four and two squadrons. The artillery pieces differed in calibre, the novel feature being the field-guns worked by the infantry. These consisted of a thinly beaten cylinder of copper, the chamber reinforced by four bands of iron, and the whole wound by rope and covered with rawhide;—they were mounted on carriages so light that two men could drag and manipulate a gun, and they were very slow in heating. The effects of this artillery are graphically described by Munro, a surgeon of McKay's Scotch regiment.

"It is thought the invention of cannon was first found at Nuremberg for the service of man; being at first, for a long time, used for battering down of walls and cities, and for counter-batteries, till at last they were used in the field to break the squad-

* From a note found among the papers of Axel Oxenstiern, dated 1632, it appears that some regiments had 12 companies and 1787 men; others, 11 companies and 1533 men; others, 13 companies and 1940 men; others, 12 companies and 1824 men. Since 1614 the company had varied from 120 to 140 men.

rons and battailles of horse and foot ; some carrying pieces called spignards, of four foot and a halfe long, that shot many bullets at once no greater than walnuts ;—and how soon the trumpet did sounde, the enemy were thundered on, first with these as with showers of hailstone, so that the enemies were cruelly affrighted with them, men of valour being suddenly taken away, who before were wont to fight valiantly and long with sword and lance, more for the honour of victory than for any desire of shedding of blood ; but now men were martyrised and cut down at more than half a mile of distance by these firearms and thundering engines of great cannon that sometimes shoothe fiery bullets able to burne whole cities, castles, houses or bridges, where they chance to fall ;—and if they happen to light within walls or amongst a brigade of foot or horse, as they did at Leipsigh on the grave Van Torne his brigadd, they spoil a number at once, as doubtless, the devilish invention did within Walestine."

The opposing imperial infantry regiments had 6 companies of 300 men, each company having a surgeon.* One half of the soldiers had very heavy matchlocks, a forked rest 4 feet long and a sabre of the same length, the cartridges being carried in metal or wood boxes on a leather shoulderbelt ;—the other half had pikes 15 to 18 feet long and swords ;—both had helmets, but the pike-men had breast-plates and mailed aprons as well. They were in 10 ranks. A cavalry regiment had 5 companies of 100 men each, and no surgeon is mentioned in its organization ;—the *cuirasseurs* were weighted down by complete armor, a long sword and two pistols and fought in 8 ranks ;—the *carabineurs* had pistols, sabres and carbines, helmets and breastplates, in 5 or 6 ranks, and the dragoons, in the same number of ranks, were like the infantry, except that they were mounted and had a lighter musket. Drills and exercises in this army were very minute and manœuvres were very slow.

At this period troops subsisted mainly on the country and plunder, but Gustavus Adolphus made efforts to deprive his campaigns of the appearance of incursions ;—he combined his troops in marching, fighting and feeding, established magazines and distributed daily rations of bread and meat. There was no

* Some writers assert that the imperial armies had no surgeons ;—all seem to base their opinion on the anecdote of Tilly being wounded at Leipsic and compelled to seek a surgeon at Halle in his flight. Recent researches disprove this, for which see Baas, *Hist. of Medicine*, 17th century.

separate commissary officer, each general acting in that capacity. His Articles of War are very explicit, prohibiting pillage without leave under penalty of death;—quarrels over spoils were punished by seizure of the goods, which were devoted to the "next hospital";—civil hospitals, except when used for offensive purposes, were expressly reserved from pillage, as also churches, schools and mills;—churchmen, the aged, maids and children were shielded; ordnance, munitions of war and food were to be left for the use of the army, exempted from pillage, and one tenth of his spoil each soldier was to give to the sick and wounded in the hospitals.

Billeting was at its height, and the custom was to leave the sick, wounded, prisoners and heavy baggage in a captured town with a small garrison, the disabled to be treated in the civil hospitals. This was often difficult, as appears from an edict of the Elector John George of Saxony, for Dresden, after the battle of Leipsic, Sept., 1631, mentioned by Froehlich. Wagons were used in both armies for carrying the wounded, and an instance is related of a badly wounded prisoner being transported to Pappenheim's quarters on two pikes.*

Gustavus made it a rule to gather the enemy's wounded and bring them to camp, whence they were sent to hospitals in the neighboring towns. He was anticipated in this by Henry IV. of France during his campaign in Flanders, where he commanded besides that the wounded prisoners receive without distinction the same treatment as his own men. Indeed, the sentiment of humanity toward an afflicted enemy, though far from universal, was not uncommonly exhibited during the Thirty Years' War, and several instances are related as anticipating in a measure the Geneva Convention. At the siege of Dömitz by the Swedes, 1631, under Colonel Lohansen, in the articles of capitulation there was one to supply wagons for the transport of the sick along with the garrison retiring with the honors of war. And in 1636 there was an agreement made between John George of Saxony and the representatives of the king of Sweden at the surrender of Magdeburg, that the sick were to be left in the city and when cured to be given passes to return to their regiments. The same compact was made at Görlitz, 1641, between the same parties.

The career of Gustavus was terminated at Lützen, 1632, by a

* This method is mentioned in the *Chronique de Bayart* as having been offered to the *chevalier* when he received his mortal wound, but was declined.

ball traversing his breast, his arm having been first broken by a bullet, which fact he hid from his soldiers. His military talents placed him among the greatest generals of this century so prolific in warriors, and his example in caring for his soldiers, sick and well, had their influence, no doubt, on his political ally, Richelieu, and others, and thus served to bring forth organized means for their welfare when disabled in action.

Epidemics of all kinds were very frequent during the century, though not always in the train of its incessant wars, yet typhus and dysentery were often due to the general misery of the people consequent on war. Scurvy principally prevailed in the armies engaged in the Thirty Years' War. Considering the opportunities of the period, it has been observed, as a curious fact, that the century was very unproductive of epidemiological works; yet there were published no less than 28 first editions on these diseases in armies, including 2 naval and 10 on particular diseases, by military authors. It is also remarkable that from the beginning of the Thirty Years' War for fifty years very little military medical literature of any kind appeared;—only 8 original works on surgery, nearly all unimportant, and 9 on diseases, out of a total for the century of 34 on surgery, in contrast with 45 for the 16th century; 2 on hygiene, 1 on the simulation of disease and 2 on medical organization. Especially toward the end of the century were sown the seeds that made the 18th century, in this and all other respects, the most noteworthy of modern times.

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PART III.—THE EIGHTEENTH CENTURY.

The Battle of Fontenoy.

The administrative services for armies were of very slow and irregular growth prior to the 18th century in France, where they originated, and in other countries, notwithstanding the spirit of imitation and improvement which seems to be so universal

even in our day. They then became an affair of government, and before its close, when armies assumed more of a national character, everything pertaining to the life of a soldier was of as much concern to the State as now. Popular interest, too, was excited to such an extent that, long before the French Revolution, discussions on tactical subjects were so frequent and violent in the salons of Paris that the court and fashionable world were divided into two camps. Grievous faults in organization and practice lasted through the century and remains of the old, severely criticised and generally unsuccessful methods, yet exist in some armies. Still, these services then became to the general of as great importance as his plans for a campaign. The history of their development is voluminous and very interesting to the military student. Two especially curious features are to be observed. There is no natural order of time or succession in the births of departments, or in the evolution of the details of each, particularly of the medical, and, what appears to be a good reason for this, most advances were made by circumstances impelling individual endeavor before the State acted.

All known methods of securing men for the ranks were tried at one time or another. Voluntary enlistment was everywhere encouraged more than before, and, with the evident intent of making the soldier's position more honorable, it was declared for fixed periods, first by Venice in 1766. This had been done at times for certain purposes, as by England in 1755, for three years, but the understanding that enlistment was for life or until discharge by order, existed on all other occasions, until 1775. Marshal Saxe was a strenuous advocate of a limited period as early as 1732. In the beginning, from whatever source coming, the recruit underwent the inspection of his captain only, as to physical and other qualifications, and, consequently, there was no uniformity in this respect except as to height and age, which were prescribed by law. From 1726 to 1775 in France a medical examination began the ceremony of admitting a person in the provincial militia, from which the ranks of the army were filled according to necessity, and in 1763, to each of thirty-two regiments of recruits then organized was assigned a surgeon, who was required to inquire into the physical aptitude, in the presence of the commissary of war. In 1778 an inspector-general of recruiting for foreign service was appointed in England but there was no medical examination until 1790, and then by reason, appar-

ently, of the complaints of regimental surgeons abroad, and no written attestation of it before the last year of the century. As early as 1745 rupture disqualified, by act of Parliament, no professional opinion being exacted. The Prussian regulations of 1788 for the first time order real examinations by the regimental and battalion surgeons; before that date violence and deceit notoriously prevailed to fill the ranks.

Billeting, onerous to the civilian and subversive of discipline for the soldier, was the common usage until it was so modified that it was practically abolished before the end of the century.* Although barracks, in rare instances, had been constructed in France in the previous century and a uniform type had been designed by Vauban and futile ordinances issued for their erection, they really date from the early years of the 18th century, the first, in most continental countries as well, having been built at the instance and expense of municipalities, to avert the charge of lodging from the poor inhabitants, the wealthier classes being nearly all exempted. The number of casernes was greatly increased and their plans very much improved during the reign of Louis XVI., and in 1818 their construction was assigned to the engineers. England began in 1739, by erecting low, ill-ventilated houses that bred disease, and these were used before Pitt interested the State in the matter, building large barracks to such an extent that the expense became a political issue. The obligation of cities to shelter troops was in force in Prussia as late as 1810, when the government assumed it. Regularly laid out modern camps, on the ancient Roman model, and the consequent good order of everything relating thereto, date from Martinet, whose plan Louis XIV. adopted in orders, 1667. The habitations of soldiers and their accessories was a favorite theme among writers on the Art of War,—Feuquieré, Frederick the Great, Saxe, etc.,—and the hygienic details were discussed by every military medical writer, especially worthy of note being Pringle, 1752, Brocklesby, 1764, Monro, 1764, and Colombier, 1772.

Nor was the sanitary condition of the soldiers neglected in the matter of clothing, the literature of the subject being meagre, however, to this day. The hair, hat, stockings, shoes, coats, breeches were all criticised in the minutest particular by Saxe,

*It is now legal in France, in certain cases, as during a general mobilization, when barracks would be insufficient. It was prohibited in England in 1745 except on licensed victualers, but lasted in Scotland as late as 1857.

who cared more for the soldier than any other general, and gradually reformed on lines laid down by him, according to Desgenettes, his commentator. Uniformity was introduced in France 1670-1679, among the improvements of Louvois, the soldier before that time wearing a shoulder belt over a steel breastplate and ordinary dress. Its supply as a source of profit was taken from the officers in 1729,* yet in 1779 the war minister, St. Germain, complained that soldiers were poorly clad, more for theatrical effect, and with no reference to health. The first English regulation for clothing was issued in 1751, and Frederick William began the reform in Prussia. It was not until the French Revolution that a permanent interest became manifest and only after that period, except incidentally, by medical authors.

Every commander who recorded his experiences or opinions, from Turenne to Napoleon, including the eccentric Suwarrow,† recognized the hygienic importance of food, and has something to say about it. A few, like Rutowsky and Maillebois, and French officers generally, prescribed, in marching orders, rules to govern its consumption. The standard daily allowance was 24 oz. wheat bread,‡ 1 lb. of meat and one pint of wine or two of beer. The bread was sometimes increased to 28 oz. and the cavalryman's ration was one-half again as large, as a rule. In England bread seems to have been issued always by contractors; there was a stoppage for it, however, while other articles were sold by officers at advanced and often exorbitant prices, and as pay was irregular, the result may be imagined. Frederick the Great instructed his generals to supply bread 2 lbs. daily, and meat 2 lbs. weekly, free during a campaign. In 1799 the issue was made in France

* The custom lasted in England until 1858.

† A book, "Discourse upon the Trigger," attributed to him, was sent by the Russian government to every regiment in the service. It contains these rules for diet. "Have a dread of the hospital. German physic stinks from afar, is good for nothing and rather hurtful. A Russian is not used to it; messmates know where to find roots and herbs. A soldier is beyond all price; take care of your health, scour the stomach when it is foul; hunger is the best medicine. If loose bowels want food, at sunset a little nourishment; for costive bowels some purging plant in warm water or liquorice root. In high fevers eat nothing even for twelve days, but drink small beer as much as you please. In intermitting fevers, neither eat nor drink. In hospital the first day the bed is soft, the second comes French soup, and the third you are laid in your coffin; one dies and ten of his companions inhale his expiring breath. For the healthy, drink, air and food; for the sick, air, drink and food."

‡ Rye bread was issued in Queen Anne's time but discarded because of a notion that it caused dysentery.

at the expense of the government, and not deducted from the pay of the soldier. The Russian troops made their own bread long before this. Subsistence details were placed, in Richelieu's time, in the hands of civilians, who were directly under the ministers, and it thus happened that both military operations and generals were subject to them. Guibert says that this system of brigandage was at its height in 1757, and soldiers in all armies suffered from insufficient quantity and bad quality. There were no regular commissaries in England before 1787, the contract system prevailing, and even the great Marlborough was suspected of sharing profits obtained by fraud in the supply of food. The vice lasted in all countries, notwithstanding the often expressed wishes of the generals and orders of government and in spite of warnings by medical officers. The work of Lind for seamen is to be especially commended. Toward the end of the century we find such expert opinion more highly regarded, and physicians and surgeons appear on boards constituted to inquire into the subject of articles of diet. Special hospital diet did not originate until in the last half of it.

The transport service, personal cleanliness, marches, drills and exercises attracted the attention of both military and medical writers, special works and orders appearing, and all these subjects were treated more or less under the now very common head of means of preserving the health of soldiers.

This growing general interest in military sanitary matters greatly improved the condition of the soldier, and when they became a part of the duty of medical officers the position of these was more elevated and respected. Only physicians who were University graduates, and surgeons, were at first considered of sufficient importance to be given the rank and uniform of officers, but before the beginning of the 19th century, assistants, mates, etc., were commissioned, and surgeons, were considered the equals of physicians. Officers of the line like Robert Jackson transferred to the medical staff, and from the medical staff, like Charles Bisset, to the engineers. Hospital affairs began to be governed like military, the French in 1718 setting the example by the adoption of medical regulations establishing discipline, defining duties and exacting reports; then followed a system of inspections and the creation of a department with a chief subordinate directly to the minister of war. Probably the first English regulations were issued in 1762 by Robert Gordon at Winchester

camp with the approval of Brocklesby. To meet the demands of new responsibilities it soon became apparent that a special training was needed, and schools were founded, in France at army and naval hospitals, 1718, separate and elaborated amphitheatres, 1775, in Saxony, 1748, as a part of the *Collegium Medico-Chirurgicum* of Prussia, 1719, distinct in 1795, and in Austria, the *Josephinum*, 1784. How much of this was due to individual effort is shown by the fact that Desoteux established, with the aid of his colonel, a school of surgery in his regiment that became celebrated; it had regularly about sixty pupils, many of whom became distinguished surgeons and even professors in the faculty. And in 1766, through the exertions of Richard de Hautesierck, inspector of hospitals, appeared in France the first journal devoted exclusively to military medicine, though before this Schaarschmidt and Henkel, military physicians, edited publications on medical matters in general, the former from 1708 to 1749, the latter from 1747 to 1772. But the greatest and most beneficial institution of the century was the *Academie royale de Chirurgie*, founded 1731, at the instigation of de la Martinière. Five of its seven officers, and one-half of the forty members nominated by the king, and of the associate members, were prominent military surgeons who served in the field, and more than one-third of the authors of papers and observations contained in 4 volumes of memoirs, 1743-68, were in the army or navy.

With the exception of the last decade, which was the most eventful, brilliant and fertile epoch in the entire history of military medicine, the most interesting period of the century is that between the origin of the Academy and the publication of the second volume of its transactions in 1753. Within this period were conceived, signed and operated the celebrated articles affecting the neutrality of hospitals, between Lord Stair and the Duke de Noailles. The official correspondence of the latter with his king and d'Argenson, the minister of war, credit the first suggestion to Stair, but there is good authority for the belief that Pringle, chief physician of the English army, inspired the proposition, many circumstances after the battle of Dettingen, 1743, bringing about a favorable condition of mind in both armies. With the campaign ended the agreement;—a similar arrangement for all time was advocated by Monro, Peyrilhe, Percy, surgeons, and Chamousset, intendant-general, and proposed on occasions, as by Moreau to the Austrian General Kray. In 1820 the subject was revived,

and again in 1864 by Henri Dumant, a Geneva philanthropist, and it resulted finally in the adoption of the present articles. During this time the number of permanent military hospitals in France increased rapidly; there was established the first special hospital for officers and soldiers at the hot springs of Bourbone; new regulations encouraging the spirit of detail and subordination in all these institutions were promulgated, and the selection of the personnel and its payment were first made by the State. In the English army in active service abroad, hospital comforts were supplied so far beyond anything heretofore extended to the soldiers that there arose a lengthy correspondence between the Duke of Cumberland and the home authorities with reference to the additional expenditure incurred. Humanity, Fonblanque says, had not yet become an element in British military economy. Austria, Prussia, Denmark and Sweden attempted the introduction of the French system of hospitals in their armies. Questions in surgery began then to be discussed in a comprehensive and scientific manner, as never before, the battle-fields of Dettingen and Fontenoy especially furnishing ample material from which practical deductions were made by many surgeons, and their differences brought to light details that single individual experience had failed to give to the world. Then, too, was first formed the germ of an organization for the prompt relief of wounded on the field, that finally developed into the present ambulance system.

The Marquis de Feuquière has much to say concerning the administration of fixed and movable hospitals at the beginning of the century. He mentions nothing similar to what took place, probably for the first time, at Fontenoy. Randby, the last royal household surgeon to be present with the English king in active service, is credited with the first suggestion, but he made it after Dettingen, in the form of a recommendation, and I can find no such actual organization in the British army before 1748, when are mentioned flying, fixed and also convalescent hospitals. The custom was, as described in Marlborough's time, to extend the order of battle in front of the tents, behind which were placed the surgeons to await the arrival of the wounded. Both English and French generals complained of the sick and wounded interfering with military movements during and after an engagement. Randby's project was, that when an army was ranged for battle, the surgeon-majors of three or four regiments posted side by side, should unite with their assistants under the same tent, taking sta-

tion at the rear guard, according to the orders of the general:— the wounded were to be carried to these points, and by these means the surgeons could assist each other and do their duty with diligence and exactitude. He then deplores the actual method of carrying wounded from point to point without any system and much to their detriment.

We are indebted to Bagieu, a distinguished French military surgeon, for a few scant particulars, which are given casually for the purpose of elucidating a surgical question. He says that "in battles there is an ambulance hospital, more or less within reach of the place where an engagement occurs, where the surgeon-major and other surgeons hold themselves in readiness. This is the first depot where wounded are collected, from whence they are carried to hospitals in the nearest towns, and thence to cities farther removed when these become crowded. It is rare that surgical operations are performed on the field proper, that is, at the place where wounds are inflicted, and still more rare are amputations performed. The light wounded betake themselves to the ambulance station, the dangerously wounded are carried there on litters."

The place occupied by the ambulance is thus described: "Sometimes, as at Fontenoy, it is in the open field, commonly it is in some village, more rarely in the cities, and nearly always sufficiently distant from the place of combat." He also discusses litters, mentions a horse litter improvised by the great surgeon, J. L. Petit, praises transportation by water, accomplished on a considerable scale after Dettingen, and gives the detailed structure of a wagon specially designed for carrying wounded.

With the aid of other writers the arrangements at Fontenoy can be pictured.

The contending forces, allied English, Dutch, Hanoverians and Austrians, 55,000, and the French, 60,000, were organized very much alike; foot battalions of five companies containing 100 to 140 men each, two to four battalions making a regiment numbering 1000 to 2700 men, the English battalions being slightly largest; cavalry, in squadrons of about 100 men each. As at this time each infantry regiment had a surgeon and mate or assistant, it is estimated that the allies had about forty regimental medical officers, the French as many; the cavalry of both armies had none. There was on both sides a small number of physicians, one usually to a garrison of about 10,000 men, and army surgeons.

The infantry were armed with flintlock muskets and bayonets, the sword having been abandoned about this time, and they worked the field pieces of artillery, the largest mentioned being a battery of six 16-pounders on the bank of the river Scheldt opposite the field, to cover the retreat of the French king. All arms were engaged at one time or another, the artillery opening the battle, and at the critical moment, supported by cavalry, saving the day for the French, an occurrence said to have been the first combination of the two arms in history.

With the village of Fontenoy toward the right of the French centre, the length of the line that bore the brunt of the battle was about 1200 yards, and the width, of what was practically a closed field, was 2000 yards. The point where the English and Hanoverians massed their attack was on the left of the village, including it eventually, and it was here that the terrible slaughter of the French infantry nearly won a victory for the allies. Surgeons were posted on the first line, as is proved by the fact that while the English were advancing on the regiment stationed nearest Fontenoy, the French lieutenant-general Luttaux was wounded, and his aide implored him to have his wound first dressed before going to report to the king. The regiments of Hainaut and Dillon were, in the beginning, on the French left, and while moving toward the centre to stay the English by an attack in the flank, lost heavily. It is stated by Boucher that on the field itself amputations were performed on wounded of these regiments, it is inferred, at the ambulance hospitals, which were, at the furthest, about 2000 yards from the front line. After the battle these ambulances were evacuated and the wounded carried on caissons and carts to cities in the rear, principally to Lille, 16 miles, and Douai, 20 miles distant, where an immense number of surgical operations were performed at hospitals established for the purpose, the civil hospitals, churches and private houses being used.* A battle begun with an exchange of fencing master's compliments ought to have terminated by an exhibition of practical philanthropy, and Voltaire says that in these hospitals no

* The following members or associates, or contributors to the transactions, of the French Academy of Surgery were present: Boucher at Lille, where his conduct is mentioned as beyond praise, Geraud, Guffroy, Pollet, Guerin, Vandergracht, Theri at field hospitals, Faure and Read at Valenciennes. Garengeot was, I presume, with his regiment, *du Roi*, one of those at the centre of the conflict; Andouillé had charge of the whole system of evacuation of wounded on cities of the north of France; Ravatot was at one of these, and La Peyronie, its President, operated on the field.

comfort was wanting for the wounded French or their prisoners. The zeal of civilians and soldiers was such that the surgeons were obliged to interfere, and the hospitals were so well managed that officers preferred to be treated there. The allies carried 600 wounded twenty miles, to Ath, where a hospital was established in the casernes; they left 1200 in the hands of the French, who had of their own 4000.

Here then, at Fontenoy, May 11, 1745, wounded soldiers were treated on the first line by regimental surgeons; they were collected at ambulance stations, where capital operations were performed, then transferred to hospitals prepared for them in near cities, and, when these became overcrowded, to cities further away. A few months after this battle, Maillebois conducted an army into Italy, his chief physician being Baron, who was subsequently dean of the Faculty of Paris, and in nearly every daily order for marching and camping is designated a place for the hospital *ambulant*, usually on the march in rear of the artillery with the treasure and provisions. The day before the battle of Bassignano, September 27, 1745, three ambulance hospitals were organized, one for each column, and ordered to take station at villages, each about 1200 yards in rear of the line of battle on the river Tanaro, where an engagement was expected. Two of these hospitals actually united opposite the centre of the line, which covered ground about 6000 yards long. And in the "Art of War," by the Maréchal de Puységur, published in 1749, a map for illustration shows the ambulance about 2500 yards in rear of the first line. Excepting an untried project of Ravatot, very little improvement, on Randby's outline and Bagieu's account, took place subsequently until Larry and Percy made their names immortal, not only for the invention of details to rapidly relieve and remove wounded soldiers during battles on a scale never equalled, but for their inestimable contributions to operative military surgery.

PRINCIPAL AUTHORITIES.

Saxe, *Mes Rêveries*. Frederick the Great, *Instructions militaires pour ses généraux*. Comte de St. Germain, *Mémoires*. Feuquière, *Mémoires*. Noailles, *Campagne en Allemagne*. Maillebois, *Histoire des campagnes*. Puységur, *Art de la guerre*. Guibert, *De l'état actuel de la politique et de la science militaire*. Voltaire, *Précis du siècle de Louis XV*. Académie royale de chirurgie, *Mémoires*. Delorme, *Traité de chirurgie de guerre*. Moret, *Hygiène militaire*. Fonblanque, *Treatise on the administration and organization of the British army*. Audouin, *Histoire de l'administration de la guerre*.

ARMY REGULATIONS.*

BY LIEUT. H. B. MOON, ADJUTANT 20TH U. S. INFANTRY.

WINTHROP defines Army Regulations as "authoritative directions as to the details of military duty and discipline." These directions, it seems to me, should be definite and distinct, and should in no case, nor in any wise, conflict with any other directions which we are bound to recognize, or which we are taught to respect. When these directions do thus conflict, instructions should be given at the same time, conveying the necessary information, so that the student of our Army Regulations would know at once upon what foundation to base his knowledge. It may sound very pretty to read in our military law-books that "to have legal force and effect, Army Regulations must not contravene existing law and must not legislate." I say that our Regulations should have no such matter within its covers, and that if we receive from the War Department (the only source from which such instructions could come) a general order or a circular concerning some paragraph of the Regulations, we should respect it at once and without question, taking it for granted that this decision of the War Department is legal. Our military law teaches us that the Regulations "are law to the army and those whom they may concern," and that "a failure to observe a regulation may constitute a military offense." Then how necessary it is that our Regulations should

* This paper was read before the Post Lyceum at Fort Assiniboine, Montana, on February 8, 1893. In its preparation it was my desire to be brief, in order not to occupy too much of the time of the Lyceum in the reading of my report. For this reason there were many of the notes that I had collected together which I decided later not to make use of. Having served the sole purpose I had in view at the time, namely, to furnish sufficient data for the preparation of a written report to be read before the Lyceum, I destroyed them. The idea that the result of my labor might furnish material for a magazine article did not, for an instant, enter my mind at any time while I was engaged upon it. This explanation is made in view of the fact that I am aware that this article covers but a small part of the ground that could be covered by the subject chosen. Many defects other than those I have mentioned could be pointed out concerning our Regulations, as they now exist. At the conclusion of my reading before the Lyceum, I was, to my surprise, so generally urged to send my paper to the Military Service Institution, that I now reluctantly consent.

H. B. M.

be given to us in a manner so clear that we can understand them distinctly and definitely.

In order to familiarize ourselves with the subject of army regulations, it is necessary to study, not only the book known by that name published in 1889, but also many general orders and circulars from the Adjutant-General's Office published before and since. The Revised Statutes, in addition, must be consulted. Many orders and circulars from the Adjutant-General's Office, published prior to the Regulations of 1889, are still in force, and our attention is, at times, called to them,—quite frequently as regards the circulars. I will mention two examples, one a general order and one a circular, in support of this statement. G. O. No. 64 of 1884 is still our guide for ascertaining the quantities of veterinary supplies authorized for a three months' supply for 100, 200 or 300 animals. Circular of November 5, 1888, contains the authority for our forwarding, at the present time, reports of enlisted strength at the end of January, March, May, July, September and November.

The present regulations were revised and condensed by a board of officers constituted per S. O. No. 298, A. G. O., series of 1886. The board labored hard upon its work for over two years, and notwithstanding the time and attention given to the work, the ink upon its pages was scarcely dry before many changes were made, in the shape of amendments and decisions published in general orders and circulars. And since then the amendments and decisions have been so many that it has been almost impossible to keep abreast of them. And what is more unfortunate for us, who must make daily references to our guide, this multiplicity has involved a complexity that is at times hard to unravel.

As changes have been made in the paragraphs of our present Regulations, as they stand in the book, the paragraphs themselves should have been amended accordingly, so as to correspond with the change, and thus render a correct reading. Many paragraphs have been changed by what seems to be technically called "amending" them, that is, by striking out all the words of a paragraph and substituting therefor other words which are written out in full in the general order in which the amendment is published. Other paragraphs have been changed, or the meaning either more fully explained or altered, by means of decisions from the War Department. Others have been changed by Acts

of Congress. Where paragraphs have been changed by means of either of these last two mentioned methods, the course mentioned in the first case should be adopted, that is, to publish a general order stating, as is usual in such cases, that paragraph so and so of the Regulations is hereby amended to read as follows (the wording necessary to make the paragraph agree with the latest law or instructions on the subject should then follow). In this manner the student of the Regulations could easily keep himself informed regarding them. This has not been done, and in consequence many of our paragraphs when considered as they read printed in the book, or as they read according to the amendment published, do not carry with them the correct information. This is not as it should be, considering that this subject is one concerning a military matter and for the guidance of military men. I have recently been making quite an extended study of the Regulations, and during my research I have noted the following as some of the discrepancies existing between the Regulations and other published instructions concerning them,—also of Acts of Congress and orders or decisions in conflict therewith.

General Orders No. 117, A. G. O., series of 1890, publishing the Act of Congress which authorizes the establishment of summary courts, states distinctly that enlisted men charged with certain offenses "shall, within 24 hours from the time of their arrest, be brought before a summary court," etc. Likewise, the order of the major-general commanding (137 of '90) establishing the summary court in accordance with this Act of Congress, says: "The post commander * * * will cause the accused to be brought before the summary court within the statutory time." In contradiction to the foregoing, Circular No. 2, series of '92, says, concerning the same subject, that "The time of trial does not affect the legality," and "A delay in time of trial is not a matter of defense." It seems to me that this decision is clearly opposed to the Act of Congress.* Similarly, Circular No. 2 of

* My reason for arriving at this conclusion is as follows: Without at all considering the question of the advisability or the inadvisability of this kind of legislation, the intention of the Act of Congress clearly is, as derived from the very wording of the Act itself, to form a protection or safe-guard to the enlisted man, by affording him a speedy trial. It surely must have been the intention of the Act that the non-fulfillment of its provisions would inure to the benefit of the enlisted man. Circular No. 2, of 1892, seems to imply that the rights of the enlisted man are not here in question,—his trial might be delayed a week or more, and he be not a whit the gainer; in which case the only question requiring any consideration whatsoever, being, "did, or did not the post

1891, says: "Trial should be had on Sunday only when the exigencies of the service make it necessary." The Act is plain and says twenty-four hours from time of arrest, and no provision whatever is made concerning Sunday.

A number of examples of this kind could be given, wherein instructions of an explanatory nature, emanating from headquarters of the army, will not bear a critical examination when compared with the original subject matter upon which the decision is made; or whereby the original subject matter is made to mean not exactly what it says.

A conflict of decisions may be noticed by consulting Circular No. 10, of 1886, and Circular No. 1, of 1892. The former says "A garrison court-martial in sentencing a soldier to forfeit one month's pay cannot include the retained pay." Circular No. 1, of 1892, says "The amount retained as retained pay is a part of the month's pay, and as the jurisdiction of the inferior court extends to the forfeiture of the whole of a month's pay, it must extend to that part of it which is retained." While we are taught to obey the last order, and I suppose would, in consequence, take the last-mentioned decision as our guide, yet there is nothing to be found anywhere stating affirmatively that the first decision is reversed or changed. I would judge from the context that the last decision was made without a remembrance or knowledge at the time of the existence of the first. Another example of the manner in which Secretaries of War have, at different times, viewed the same subject, may be found by comparing Circular No. 11 of 1885, and Circular No. 4 of 1887. The former says, in brief, concerning the subject of defective post shoes, that the same relief cannot be authorized for cavalry boots. Circular No. 4, of 1887, entirely ignores the existence of this decision, and in referring to the subject of defective post shoes, adds the word boots, without stating in any way that the former decision was reversed. Many examples could be given where decisions have stated affirmatively that previous decisions were amended, one in point being Circular No. 9 of 1891, which says that Circular No. 12 of 1885 is modified to read as follows: — the correct reading is then given, which reading makes the decision convey instructions which are the reverse of what was first stated.

commander fail in his duty in not bringing the man to trial sooner?" I fail to see how a construction, such as enunciated in Circular No. 2, of 1892, could be evolved from the wording or context of the Act.

Winthrop says: "If the court has forfeited an amount greater than a month's pay, the commander cannot give effect to the sentence by disapproving, mitigating, or remitting the same as to the excess, but the sentence is wholly illegal and void." Similarly in Circular No. 3 of 1886, we are presented with the case of a sergeant sentenced to reduction and to forfeit \$15 of his pay. The Circular says: "So much of the sentence as awarded a forfeiture of \$15 was beyond the statutory powers of the court, and by a well established rule of law, is entirely illegal, and no part of the awarded forfeiture can be made operative." Circular No. 12 of 1892, says: "When a sentence of confinement or forfeiture is in excess of the legal limit, that part of it which is within the limit is legal and may be approved and carried into execution."

Another feature may be illustrated by calling attention to Circular No. 7 of 1888, which states that civilian employés on duty at stations where other medical attendance cannot be procured, are entitled to the professional services of medical officers of the army. This clause was inserted in the Regulations of 1889, in paragraph 1629. But later this paragraph is amended by G. O. No. 38 of 1890,—the only amendment being that this clause is left out. No affirmative instructions were ever received annulling this Circular No. 7 of 1888, but it is reasonable to suppose that the decision of 1888 is revoked by inference, in consequence of the later order amending the paragraph; and this remark brings me forcibly to the consideration of a practice which I think should be definitely and positively avoided in a guide for military men—such as our regulations and orders should be—and that is, of requiring us to obtain our knowledge of them through inference. My inference may not be your inference, and both of our inferences may frequently be different from those of our superiors. As an example, Circular No. 1 of 1888 may be cited, which says "An officer cannot become properly entitled to the increased pay pertaining to a regimental staff position until he assumes the duties of that position." Now let us examine paragraph 226, A. R., which says,—"A regimental commander is restricted in his choice of staff officers to the lieutenants on duty with the regiment"; and paragraph 224 says "These appointments will bear the date upon which they are actually made." The Revised Statutes give the present rate of pay of a regimental adjutant to be the same as of a captain not mounted. It would seem a very natural inference that this clause of Circular No. 1 of 1888 was

necessarily rendered void by these paragraphs of the Regulations, but such is not the case, Circular No. 1 of 1888 is considered by the War Department as still of binding force, as I know by personal experience.

In order not to extend my remarks to too great a length I will select only a few examples to illustrate my meaning under the various headings into which I have divided my subject. I will now mention one or two which are not clear, or are of indefinite construction.

G. O. No. 120, series of 1890, is the latest order giving the composition of a regiment and of a company. In consequence of an order establishing the Indian company, this order needs remodelling. According to my calculation the maximum enlisted strength for an infantry company of a regiment in which there is an Indian company, is 51 men; but I notice this strength has been placed by superior authority at 55.

Paragraph 333, A. R., as amended by G. O. No. 36 of 1893, is indefinite in that it says " * * * the other members of the council shall be the line officer next in rank to the commanding officer, and the company commander next in rank to such line officer." I imagine it would be a difficult matter to analyze clearly the above sentence so as to make it applicable to this post in the event of there being one more field officer of the line present for duty, or applicable to the post of Camp Poplar River, Montana, in case one of the company commanders should be detailed in charge of the exchange.

To illustrate another example, I will ask the question "should a chaplain wear a sword?" Paragraph 1789, after describing kinds of swords for general, staff and mounted officers, mentions the kind of sword "For all other officers." This would undoubtedly require a chaplain to have a sword. If we go back to 1887, we will see by consulting Circular No. 9, that the regulations existing at that time did not permit a chaplain to wear a sword. If a last order on the subject governs, then this circular is void and a chaplain should wear a sword. But I imagine it is the intention of the War Department that a chaplain should not wear a sword, and it would probably consider the before mentioned circular as a sufficient authority for prohibiting such wearing.

Speaking of swords, let us take another example. Paragraph 1789, A. R., says, under heading of swords, "For all mounted officers of artillery, light artillery sabre according to pattern in the

Ordnance Department." Circular No. 4, of 1887, says, "When a regiment is armed and serving as infantry the adjutant should wear the sword prescribed for an adjutant of infantry." A regimental adjutant of artillery is a mounted officer of artillery. Should he wear the sword prescribed in paragraph 1789 for all mounted officers of artillery? If so, Circular No. 4, of 1887, is void. We undoubtedly find many decisions published in circulars prior to the issue of the Regulations, which are considered void, and many others which are considered still in force, and with nothing to enable us to make a distinction between the two. I ask how is it possible for one who is desirous of informing himself minutely and in detail concerning our Regulations to decide which will govern and which will not? I should think it would have been apposite and of immense importance to have stated in a preface to our present Regulations what matter outside of them, published in orders and circulars from the War Department at dates prior to 1889, should still be considered as in force.

A question would naturally suggest itself in considering paragraph 301, as amended by G. O. No. 28, of 1892. Among the authorized receipts accruing to a company fund is mentioned, "savings arising from an economical use of the ration." From which it might reasonably be inferred that any part of the ration could be sold. Previous decisions have however forbidden the sale of any portion of the fresh meat ration. Whether this latter now applies or not I do not know, as the previous decisions have never been revoked except by inference.

As another case:—I notice, away back in 1882, that G. O. No. 101 requires commanding officers to designate commissioned medical officers to accompany scouting parties and expeditions against hostile Indians, which, of course, prohibits the detailing of acting assistant surgeons upon such duties. As this subject is not touched upon at all in our present Regulations, the question that is suggested to my mind adaptable to this and similar cases is,—was it the intention, in ignoring the subject-matter in the compilation of the Regulations, that the subject-matter should be no longer of binding force? Or was it intended that while no mention of it is made in the Regulations, it should still be of binding force since no subsequent order has revoked it?

There are quite a number of paragraphs in our Regulations which, as they stand or as they have been amended, are not now strictly correct, and should be amended so as to give a reading

which would be in conformity with the facts. Paragraph 136 now states, as it exists in its amended form (G. O. No. 38, of 1890), that sergeants of ordnance have no clothing allowance. This paragraph should now be amended, as sergeants of ordnance now have a clothing allowance. Further, this paragraph should provide for retired sergeants of ordnance as to clothing.

Paragraph 178, relating to certificates of merit, according to its latest amended form is entirely wrong. An Act of Congress, published in G. O. No. 19, of 1891, renders it necessary to amend this paragraph still further, in order to convey the correct information. Also paragraph 176 should for the same reason be amended; it now reads "privates." An Act of Congress, published in G. O. No. 30, of 1892, changes this word to mean any enlisted man, which, of course, includes non-commissioned officers. Paragraph 1504, in which information is given for the payment of these men by paymasters, should, in consequence, be amended.

Paragraph 1498 should be amended still further in consequence of an Act of Congress which retains \$4.00 per month from the pay of enlisted men during the first year, and which increases the pay of privates of the Hospital Corps to \$18.00 per month.

Paragraph 1105 should be amended in view of the fact that at many posts the post surgeon does not have the necessary instruments for properly recording the temperature, as contemplated in that paragraph.

General Orders No. 11, of 1892, states "The institution now designated as the Post Canteen will be hereafter known as the Post Exchange." In consequence, all the paragraphs of the regulations, in which the words "Canteen" or "Post Canteen" are found, should be amended, or some definite instruction should be given to authorize such changes. Of course I realize that we all make these changes, notwithstanding the absence of the instructions I speak of. But we do so through what we choose to satisfy ourselves with, namely, a plain inference derived from the wording of G. O. No. 11, of 1892, and similar orders.

In G. O. No. 15 of 1892, we notice a reference is made to paragraph 292, A. R. This paragraph states, concerning the band property purchased from the band fund, that returns will be made in the manner prescribed for the post treasurer. The post treasurer not now being accountable for any property does not make

a return of property accountability. This paragraph should therefore be amended.

Paragraph 1825 says, concerning uniform for bands, that commanding officers may, upon appropriations made by the council of administration, add such ornaments as they deem proper. As we do not now have regimental councils of administration (clearly the one intended in the above paragraph), this paragraph should be amended.

Paragraph 8, as amended by G. O. No. 82 of 1891, omits the rank of additional 2d lieutenant, thereby indicating that this rank no longer exists; and yet, some eight months after the date of the above named order, I notice in G. O. No. 51 of 1892, that a number of cadets are appointed additional 2d lieutenants.

Among the orders that are decidedly difficult of interpretation on account of being in conflict with well established ideas heretofore entertained through various military instructions on the subject, are Circular No. 13 of 1891, and G. O. No. 73 of 1892, concerning discretionary punishments. I think it can be safely stated that but very few officers who are responsible for the discipline of enlisted men under their command, know exactly what this order and circular mean, when considered to their fullest extent. I am decidedly of the opinion that such instructions as these should never be issued. My idea of military orders are that they should be explicit and to the point. Such instructions as those quoted permit of the greatest latitude of interpretation, and we well know that if any officer should decide to go to any great length in awarding a punishment of this kind he would render himself liable to censure, if not to trial by court-martial.

Among some of the subjects that in my opinion should have been noticed or more fully explained in the regulations are: The Infantry and Cavalry School at Fort Leavenworth, Kas.; Veterinary Surgeons, their status, uniform, if any, to be worn, how to be reported on post returns, and what reports they are to render, if any, and at what time they should be made. The relation of an adjutant to the band should be more fully described. Provision should be made for the enforcing of discipline of the band through non-commissioned officers. Paragraph 1153 speaks of a forage master and a wagon master, but no description is given as to what either is, or how appointed, etc. Definite instructions should be laid down concerning command of posts under various conditions. Different ideas prevail on this subject, especially so

when a former post commander is promoted to another regiment or his station is changed.

In conclusion I will say that our Regulations, taken in connection with the Revised Statutes, Acts of Congress, and General Orders and Circulars from the War Department, as they now stand, must not, in many instances, be taken in too literal or too strict a sense in order to arrive at a conclusion which will bear the test of revision by higher authorities. Many examples could be given to bear me out in this assertion, some of which I have mentioned in this paper.

I notice in one of our army papers a statement to the effect that General Samuel Breck, assisted by Lieut.-Colonel E. V. Sumner, are engaged upon the task of revising our Regulations. I sincerely hope that the new edition will be complete to the date of its publication, so that the orders and circulars issued previously may be entirely ignored when consulting it for positive information.

As so many of us are now required to study this subject, which forms a part of the examination for promotion, I feel safe in saying that the hope is general and unanimous that it will not be long before the new book is placed in our hands, with all the inconsistencies and matters of an indefinite construction of the present Regulations eliminated.

IS THE THREE BATTALION ORGANIZATION THE BEST ONE FOR US?

BY CAPTAIN F. H. EDMUNDS, 1ST U. S. INFANTRY.

THE continued failure of Senator Manderson's bill for the reorganization of the infantry, known as the three battalion bill, to pass Congress and become a law, as well as the failure of a bill to reorganize the infantry into twenty-one regiments of three battalions each, and to add two regiments of artillery to the army, naturally causes one to believe that the reorganization of this arm on the lines proposed is not apparently for the best interests of the service or nation.

We have been told that a three battalion organization should be adopted because it is used by the leading nations of Europe: that it is therefore a modern institution and necessary for us; that the United States being a modern and progressive nation should have the latest and most improved and approved military system. This sounds very well as far as it goes, but would it not be well to enquire if we are suited for the proposed change? A system should be intelligently, not blindly followed.

Taking the two most perfectly organized armies of Europe—the German and French—we find that their military systems not only permit of large companies, consequently large battalions and regiments, but, what is more important, provisions are made for keeping them filled up when on a war footing; therefore at this time, when most necessary, they are most effective. There is thus good reason for having a number of superior officers in a regiment. With us these conditions do not prevail. Our companies and regiments have their maximum strength when first sent into the field. From this time on, the losses are heavy and they are not compensated for by adding recruits, who are instead sent out organized into new regiments. Our present regimental organization of three field officers is better suited to our condition, for if by any possibility they are all disabled, the chances are that the enlisted strength is at the same time so far reduced that the regiment becomes the proper command for a

captain. Additional majors under such circumstances would be superfluous and unnecessary.

It is not a question of what is the best form of organization to meet the needs of the Germans and French, but what is best suited for the United States; and to best suit them the organization must be adapted to the temperament of the people, their customs, their traditions and their institutions. Is an ideal organization, which requires the utmost attention to details, plans accurately prepared and carefully followed, desirable or even possible for a country situated as ours is, so far removed from all countries that keep large standing armies? Without an urgent, pressing and ever-present necessity, can the people be expected to enact and execute in time of peace the laws at present considered necessary to render perfect and effective the military establishment in time of war?

In Germany, to keep the Fatherland intact, every thought, from that of the Emperor to the meanest citizen, is devoted to perfecting and rendering effective the army. The same is true of France. But with her, revenge for the defeat and loss of territory in 1870-71 is the guiding thought, and every sense is keen to take advantage of any mistake made by Germany. As a consequence, in both these countries, we will find the military system receiving the highest development, and a perfect organization is the first essential. With us the conditions are entirely different. To parallel us with either of these nations, or in fact with any European nation, would not only be impossible, but to attempt to do so would be extremely absurd. With us a limited military establishment is tolerated, perfection is not desired, and certainly not encouraged.

During our war of secession we saw the successive calls for volunteers made by the President. We saw these volunteers organized into regiments, officered by the Governors before they left their respective States and before they could be mustered into the service of the United States. Very few of these men were sent to fill up the old veteran regiments already furnished by the different States, which would have been good schools for raw material, but which were not effective because sadly reduced in strength. Regiment after regiment, seasoned by long service and by experience gained on many hard fought fields, was reduced below the present war strength of a single German company, viz., two hundred and fifty men. We can find but few

instances of the old regiments filled up with the new levies, and when a case is found, investigation will show that it was almost entirely done with the drafted men. We can trace this state of affairs directly to clause 16, Section 8, Article 1 of the Constitution: "The Congress shall have power; To provide for organizing, arming and disciplining the militia, and for governing such part of them as may be employed in the service of the United States, reserving to the States respectively the appointment of the officers and the authority of training the militia according to the discipline prescribed by Congress."

This clause confers a great power upon the executive of a State, and it is unreasonable to suppose that any State will voluntarily relinquish the great influence given it through its executive, and consult the interests of the whole by sending new levies to fill up the veteran regiments, but rather organize new regiments in order to appoint new officers. Therefore to render a three battalion organization effective in a protracted war, an amendment to the Constitution would first be necessary, relinquishing the right guaranteed to the State to appoint its officers, and conferring that right upon the general government. In no other way could veteran regiments be kept to an effective strength. But this concession could hardly be expected, for the power conferred, while it might not be in reality dangerous, would be so considered by the people at large and never granted. The tendency of the past few years has been towards the centralization of army affairs at Washington, but there is no reason to suppose that the States will surrender to the general government the authority to appoint officers of the militia when called into the service of the United States, a concession which would enable the general government to fill up depleted regiments. The necessity of keeping regiments in active service to an effective strength, and the futility of efforts in that direction, are well set forth in the following letter of General Sherman:

CAMP BEFORE VICKSBURG,
April 23, 1863.

DEAR BROTHER: I had noticed in the Conscription act the clauses which empowered the President to consolidate the ten companies of a regiment into five, when the aggregate was below one-half the maximum standard, and to reduce the officers accordingly. Had I dreamed that this was going to be made universal, I would have written you and begged you for the love of our ruined country to implore Lincoln to spare us this last fatal blow. Two years of costly war have enabled the North to realize the fact that by

organized and disciplined armies alone can she hope to restore the old and found a new empire. We had succeeded in making the skeletons of armies, eliminating out of the crude materials that first came forth the worthless material, and had just begun to have some good young colonels, captains, sergeants and corporals. And Congress had passed the Conscription Bill, which would have enabled the President to fill up these skeleton regiments full of privates who soon, from their fellows, and with experienced officers, would make an army capable of marching and being handled and directed. But to my amazement comes this order. This is far worse defeat than Manassas. Mr. Wade, in his report to condemn McClellan, gave a positive assurance to the army that henceforth, instead of fighting with diminishing ranks, we should feel assured that the gaps made by the bullet, by disease, desertion, etc., should be promptly filled. Whereas only such parts of the Conscription law as tend to weaken us are enforced, viz.: five per cent. for furlough, and fifty per cent. of officers and non-commissioned officers discharged to consolidate regiments. Even Blair is amazed at this. He protests the order cannot be executed, and we should appeal to Mr. Lincoln, whom he still insists has no desire to destroy the army. But the order is positive, and I don't see how we can hesitate. Grant started to-day down to Carthage, and I have written to him, which may stave it off for a few days; but I tremble at the loss of so many young and good officers who have been hard at work for two years, and now that they see how to take care of soldiers, must be turned out. If not too late, do, for mercy's sake, exhaust your influence to stop this consolidation of regiments. Fill all the regiments with conscripts, and if the army is then too large, disband the regiments that prefer to serve north of the Potomac and the Ohio. Keep the war south at all hazards. If this consolidation law is literally enforced, and no draft is made, this campaign is over, and the outside world will have a perfect right to say that our government is afraid of its own people.

Affectionately yours,

W. T. SHERMAN.

Can we expect a country whose representatives in the midst of a great war could pass the Conscription Act, to prepare the ways and means for an ideal organization? At Gettysburg the average strength present of the infantry regiments of the Army of the Potomac was two hundred and eighty men; on April 30, 1864, it was two hundred and sixty nine men. The average strength of the infantry regiments of the army operating against Vicksburg on April 30, 1863, was, present, four hundred and fifty; present for duty, three hundred and eighty-five; present and absent, six hundred and six. It is unnecessary to add statistics of other armies to show the effective strength of regiments in the field during the greatest war this country has ever engaged in, which was also the greatest war of modern times. The story of one regiment is the story of all the regiments in the field. That most of

the regiments entered the service of the general government with an effective strength there is no doubt; that they became reduced after a few campaigns and were never again filled up, is also equally certain. The aggregate number of men furnished by the State of New York during the whole war was 448,850, organized into two hundred and ninety-four regiments, twenty-five companies, and thirty-five batteries, or, reducing the companies and batteries to regiments, two hundred and ninety-nine regiments, an average of about fifteen hundred men per regiment. Ohio furnished 313,180 men, organized into two hundred and thirty-nine regiments, an average of about thirteen hundred enlisted per regiment. Still, before the war is half over, we find the regiments of the armies in which these troops were respectively serving, averaging from two hundred and sixty-nine to three hundred and eighty-five effectives. In case of another prolonged war can we reasonably expect to see the conditions changed? Will we not again see regiments sent out fairly effective as regards numbers—but in fact less than one-half the strength of a German or French regiment—in a short period reduced to less than four hundred men, under the most favorable showing, to less than two companies of German or French troops? The infantry regiments—two battalions—of the regular army to-day number four hundred and eighty-four enlisted, still less than the strength of two German companies. With these facts and figures staring us in the face, we are to-day applying the principles of the three battalion organization.

Anticipating the adoption of the three battalion organization, our system of tactics has been changed, and for several months we have been practicing the new Drill Regulations. It might be well to consider what changes will be necessary in the army as it stands to-day in order that the letter of these regulations may be carried out. In the first place, it may be taken for granted that unless some emergency arises there will be no increase in the strength of the army. The army, as it now exists, must then be adapted to the Regulations. To adapt the army to the Drill Regulations the number of regiments must be reduced. Taking the company: in order to have the minimum perfect organization, viz., two platoons of two sections each containing two sets of fours, sixty-four men must be in ranks. Adding the sergeants and musicians—seven—and the result is seventy-one. Under the supposition that every man belonging to the company can be

present at drill, seventy-one men will then be sufficient. But in practice 33½ per cent. of the company will always be unavailable, consequently this number must be added in order to obtain the practical minimum strength for drill purposes, which is found to be ninety-five. Two battalions of four minimum companies each will thus require seven hundred and sixty men, and with the regimental non commissioned staff, which must be provided for—seven hundred and sixty-two men. 12,050 men are allowed the twenty-five infantry regiments, which number divided by 762, strength of the minimum regiment of two battalions gives fifteen as the number of regiments. Therefore, in order to obtain the minimum ideal organization, the infantry regiments must first be reduced to fifteen. If the three battalion organization is to hold and be effective, the number of regiments must then be first reduced. Are we ready to pay this price for an organization which will go to pieces in a campaign of six months? But the organization adopted should be fitted for volunteers, as the regulars cut no figure in a war of any magnitude. The history of the rebellion and the practical working of the Constitution show that we should have a system suited for contraction and not for expansion. At least such must be the case until the States will permit the general government to have the absolute right to dispose of the quotas of the various States as successive calls for troops are made, to determine when they shall be used to fill up existing regiments, and when they shall be organized into new regiments.

In war the effectives become rapidly reduced and remain in that condition. Our traditions are not favorable for an ideal organization. Let us then adhere to our traditions and retain the present form of organization, adopting a system of tactics suited to the magazine gun and our national reputation as marksmen. A simple method of developing the firing line can easily be decided upon, a method which will be suited to the regiment of twelve hundred men, as it first takes the field, as well as to the same organization when, at the end of a few months' campaigning, it has become reduced to two hundred, or even less.

If a war comes, which let us hope it may not, we must rely rather on our enthusiasm, patriotism and valor to carry us through, than on a perfect organization. These qualities have never failed us.

COMPANY PAPERS.*

BY CAPTAIN G. P. COTTON, FIRST U. S. ARTILLERY.

IT is believed that our Indian wars are about at an end. In the march of population and civilization westward, that which was so long known as the frontier has disappeared. The necessity of small isolated posts within massing distance of each other no longer exists, although seventy per cent. of the army is still located west of the Mississippi River.

The total number of posts now garrisoned by United States troops, not including arsenals and armories, is ninety-six; of these thirty-three are located east of the Mississippi River, the remainder are west of it. Five of these are regimental posts, and are located as follows: one in Illinois, one in Minnesota, one in Nebraska, one in Wyoming and one in Utah. These five posts are strictly speaking regimental, but there are others, however, quite as important and as large which are not so, the command being made up of detachments of different regiments.

The question as to the proper policy that should govern the distribution and location of the army now presses for consideration and settlement. The tendency of distribution hitherto has been to abandon small and isolated posts and concentrate the troops in larger garrisons. This has been attended with good results, as they can be more economically maintained in large than in small garrisons, and no doubt the day is not distant when regimental posts will be established in each of the larger States which are now without them. They should be located so as to have the proper strategic relations to the only frontiers we now have,—those of the sea-coast, and of our northern and part of our southern boundary,—also if possible near the principal commercial centres, where transportation facilities are ample and movements of both men and supplies may be rapidly and economically made. These considerations in reference to the concentration of the army, point to the possibility of a change in the character and kind of certain returns and reports now required of the commanders of its units,—those of the battery, the troop

* Read before the Lyceum at Fort Columbus, N. Y., March 16, 1893.

and the company. The wide dispersion of our small army over the vast area of the United States, in which the company has been the unit for isolated and remote duty, has necessarily entailed upon the captain the labor of being his own supply officer; and the most striking thing in connection with the present methods of company administration is the care with which everything has been adjusted to securing its self-reliance and independence in the matter of supplies. As stated before, this arises from its actual or possible isolation for long periods, and the better to perfect its autonomy. The anomalous requirement is now made that a captain should, in addition to reports pertaining to the personnel of his command, also return those pertaining to any and all property coming into his possession and issued for the benefit of his company. I say anomalous because, after considerable research and inquiry, I cannot discover a similar requirement of a captain in the military establishments of any of the large governments of the world; indeed it is unique in our own country, and even in our army, being confined principally to the regimental organizations. In making these returns, papers are required that range through all the staff departments of the army, and at the risk of being a little tedious (for they form part of our daily lives) I will name them, only for the purpose of more clearly setting forth where in my opinion a most desirable and advantageous change could be made. And this is not said that any hope or thought is entertained of diminishing labor or conferring ease, but to relieve the captain of that sense of responsibility which presses upon his attention to the exclusion of those ends and purposes which lead to a fuller development of the strictly military features of his company.

The number of papers, including returns and reports, independent of the numberless small daily papers now required in our army of a captain in command of his company, is over 260 annually, all of which require the utmost care and exactness and many of which are both intricate and extended. They are as follows:

Books.—Morning Report Book. Sick Book. Roster. Descriptive Book. Clothing Book. Order Book. Account Book of Company Fund. Register of Articles issued to Soldiers. Record Book of Target Practice, and Vaccination Book.

Paper Returns and Reports.—Daily List of sick (in the Sick Book). Daily morning report (in the Morning Report Book). Daily detail of men for guard and fatigue. Monthly Return.

Monthly Muster and Pay Roll. Bi-monthly Muster Roll (Adjt. Gen'l). Bi-monthly Report of Enlisted Strength. Quarterly Return of C. C. and G. E. Quarterly Return of Ordnance and Ordnance stores. Quarterly Return of Quartermaster's property. Quarterly Return of Company Fund. Semi-Annual Report of Instruction. Annual Report of Target Practice. Annual Estimate for C. C. and G. E.; and on the 1st, 10th and 20th of every month, the Ration Return.

Papers Required When Circumstances Render Them Necessary.
—Certificates of disability. Clothing Receipt Roll. Discharges. Descriptive Rolls. Notifications of deposits to Paymaster General. Notifications of Collection of Detained pay to Paymaster General. Letters notifying chief paymaster of department of discharges of enlisted men. Requisition for fuel, forage, and stationery. Inventory and Inspection Reports. Letters of transmittal, complaints of soldiers, applications for transfer, and applications for discharge under provisions of G. O. 80-81 A. G. O., 1890. Charges and Specifications. Furloughs, passes, affidavits and certificates. Proceedings of Company Council of Administration. Inventories of Deceased Soldiers.

It will be remarked that the foregoing books and papers relate to two objects, viz.: the men and the property.

What relates to the men is a record of their accounts and services. What relates to property is a matter of account between the officer and the Government.

The exclusively property papers of the foregoing are:—the Clothing receipt roll, Clothing Book, Return of Clothing, Camp, and Garrison Equipage, Return of Quartermaster's property, and Return of Ordnance.

The property borne upon these papers is entrusted to the captain's charge and he is required to take care of it and to show how he has done so. To do this properly he must always bear in mind the following general rules: First, to get invoices of all property he receives;—Second, to take receipts for all property he transfers;—Third, to get certificates for all property lost or destroyed; and Fourth, not to allow unserviceable property to accumulate.

To see how much handling and accountability in property is carried on in the company let us look a little further.

The clothing receipt roll is a list of names of enlisted men of the company to whom issues are made, and opposite the names,

the articles drawn, and the price of each article and total money value of articles received, are entered. It forms the captain's voucher for issues in the quarterly return of C. C. and G. E., and must be carefully completed at the time of issue, signed by the soldier and witnessed (by a commissioned officer other than the captain), as the soldier may be ordered away the next moment and the issuing officer never see him again.

The return of Clothing, Camp and Garrison Equipage, formidable looking blanks for which are furnished by the Quartermaster's Department, are made out quarterly in triplicate, one to be retained, and two to be sent to the Quartermaster General (one for an office copy and the other for the Third Auditor), supported by the invoices of all the articles received, and the receipts for all issues and transfers.

Each supply of clothing, camp and garrison equipage, should be accompanied by triplicate invoices, for which corresponding receipts should be given. If the packages, when received, look as if they had been damaged, interfered with, or appear to be deficient in any respect, a board of survey should be applied for to the commanding officer. The board ascertains what is missing or damaged, and fixes the responsibility for the loss or damage. A copy is furnished to the officer sending the stores and the officer receiving them, and a copy is retained at head-quarters of the post. The packages will, if they appear to be perfect, be receipted for, for what they are said to contain, without breaking them, and they will not usually be broken except for issue, and then if found deficient the board is called for as above. When the invoices are not numerous, they can be entered separately on the return, otherwise they should be consolidated (and the same with the receipts) upon an abstract.

Clothing cannot be dropped from the return in any other way than as issued or transferred, and must be supported by receipt rolls for the issues, and receipts from officers for the transfers. Damaged clothing may be issued at reduced rates, assessed by a board of survey. Clothing lost, deficient, or destroyed beyond the investigation of a board of survey, can only be accounted for by affidavit.

The law requires the officer "to show by one or more depositions, setting forth the circumstances of the case, that the deficiency was from unavoidable accident, or loss in active service, without any fault on his part, and, in case of damage, that due care and

attention were exerted on his part, and that the damage did not result from neglect." These depositions accompany the return as vouchers.

Camp and garrison equipage is accounted for on the same return with the clothing, but in a different manner. It is permanent property for the use of the company, and is borne on hand as long as it is serviceable. When it becomes unserviceable, it is reported to the commanding officer, who applies for an inspector to examine it, and he makes an inspection report and recommends what shall be done with it. It is not dropped from the return until it has been inspected and ordered to be dropped.

Inventories are made of the property to be condemned, and handed in to the adjutant's office. These inventories state the articles, their number, from whom received, and how long they have been in service.

Articles which are issued to the soldiers for their constant use are charged to them on a list kept by the first sergeant, and, when lost or destroyed by their neglect, are entered against their pay on the muster roll, and deducted from it by the paymaster. Such are haversacks, canteens, bed-sacks, bugles, etc., etc. If the company—as it should be—is divided into squads under the sergeants, the tents, axes, spades, shovels, cooking-utensils, etc., are proportionately distributed to them, and they will be held responsible for them. If the articles are lost or injured by the neglect of any one, they (the sergeants) must report to whom they are to be charged, or else they will be charged themselves.

The quarterly returns of ordnance and quartermaster's property are similar documents to the quarterly return of C. C. & G. E. The clothing book is a record of enlisted men's clothing accounts. In it the money allowance of clothing corresponding to the year of enlistment and rank is entered, as well as all articles of clothing issued and the amount of debit or credit. Like the preceding papers it forms one of the links of the chain of property-burden hung over the captain's shoulder.

As a means of relieving the captain of much of the labor required by this imposing array of papers, I would suggest that he be relieved wholly of all property responsibility, and that the duty of returning and accounting for property should be put where it properly belongs,—upon the staff corps of the army. Let the captain be responsible only for its care, condition and appearance, but let its supply be made directly from the staff

corps to the enlisted men, upon the certificate of the captain that it is necessary.

As said before, the condition of our service has heretofore prevented the ready access to these corps, but the concentration of the army as now intended by the War Department will remove this obstacle and certainly foreshadows the assignment to military posts of many of the regular quartermasters below the rank of lieutenant-colonel; these number about forty-five, and would make a good beginning in establishing depots and commencing the new order of things of making issues to the enlisted men personally. There is no reason, so far as I can discover from my experience, why the ordnance issues should not also be made by the quartermaster's department to the enlisted men personally. Its superior equipment, allowances and practice give it a great advantage over the captain commanding a company, to say nothing of such work being directly in line and touch with its duties, and the very purposes of its existence. It is no matter which staff corps makes the issue as long as it is taken from the shoulders of the captain. In the English service the quartermaster issues the ordnance as well as the stores, and the enlisted men sign for them at the quartermaster's office after presenting an order from the captain. Practically the same method with unimportant variations is pursued in nearly all the other large armies of the world. And now that we are to concentrate, and have regimental and large posts the same as they have, there is no reason why we cannot do the same.

With us as with them the captain can be notified from time to time of the condition of a man's account, and with us as with them the quartermaster can be notified of charges to be made against enlisted men or any change of his status, such as promotion, etc. The final statements could have entries made by the quartermaster and sent to the captain, or vice versa, it making no difference which official delivers them to the soldier. With the elimination of the property papers from the burdens of the captain, it will be seen that the latter still has sufficient paper work left for him to do, connected almost wholly with the personnel of his command. In the first place, in this connection, there are made out by him in the course of the year forty-two muster-rolls. A muster roll is practically a military biography of every member of the battery. Think of it! Forty-two of these a year, giving the military biography of nearly sixty men each time. They are

the most important papers made out, as well as the most difficult to execute ; the exhaustive nature of the requirements being set forth in copious and numerous notes. Following the muster roll is the monthly return of the company, and then in diminished length, but not in diminished exactness and care, is the swarm of lesser papers always imminent, always urgent, and always distracting. As a contrast to these the following are about the only papers and books required of a captain in the English army. The Order Book, Ledger, Pay and Mess sheet, Defaulter's Book, Saving's Bank Ledger.

The Ledger corresponds to our descriptive book, the pay and mess sheet to our muster-roll. The defaulter's book is a record of court-martial cases, fines, etc.

No more papers are required of a captain in the German or French armies. In all of them the quartermaster not only issues directly to the men, but he does all the certifying, reporting and returning. In some cases the captain acts as an agent for its distribution ; but the duties of the quartermaster are explicitly laid down, that is (I quote from the English army regulations) he —“Is simply to act in capacity of storekeeper and to issue the articles to the non-commissioned officers and men on the written order of officers in command of companies.”

It has been said by some that such an arrangement as I suggest imperils the autonomy of the company, that the captain would see the management of his company to a certain extent taken out of his hands, and that it would be beyond his power to give expression to his wishes, in the appearance of his men, because of the intervention of the quartermaster, who, if he was so disposed, might put obstructions in the way of a captain perfecting the military appearance of his company. To this I say that the autonomy of the company is at the present time a myth, as far as freedom of action in reference to property is concerned. If anybody can inform me in what way the freedom of action of a captain can be any more circumscribed than it is at present I should be most happy to be informed. The days when succession to the command of the company was like attaining to the head of a well-appointed industrial organization which was all a personal perquisite of the captain, are gone, if they ever existed at all. Certainly I have never seen any, and I imagine any such impression often arose from an exaggeration of the sense of loss which happens when taken from immediate contact with enlisted

men, such as on those rare occasions when captains are promoted to majors. Nor is that ready convenience, embracing all the crafts and trades, supposed to be always at the disposal of the captain, any longer available. In my battery there is only one saw and one hammer, and they are the private property of one of the sergeants. Upon inquiry I find that this industrial narrowing is not peculiar to my battery or post, but seems to be generally prevalent. There has been a gradual assumption of these functions (as there should be) by the quartermaster's department and I am glad of it. If it will only take all of its paper work, which we are now doing, it will produce still greater satisfaction, and if the same strict compliance with the order or requisition of the captain for clothing, ordnance or C. C. & G. E. be enforced, as is now observed in reference to the ration return, I shall have no fear for the autonomy of the company. Still another objection has been offered,—that when the company is sent away from its post or regiment, or battalion quartermaster, on detached or remote duty, it will be unsupplied and endure delay, perhaps suffering, waiting to have requisitions filled at distant points. In answer I would say that when we remember that a captain cannot now be sent to Jersey City on recruiting duty without making him an acting quartermaster, and also that for the past twenty-five years fully three-fourths of all the staff drudgery of the army has been performed by line officers detailed from their proper duty, it will be readily understood that the cases mentioned above can be fully met by the detail of one of the company officers. But when so detailed he is to issue directly to the enlisted men, the captain having no connection with it, except to give each man his order, which, of course, shall be the quartermaster's voucher.

That the plan proposed in reference to company property is not unusual, or even novel in our own service, I have elsewhere intimated. Happily the existence of facts which cannot be disputed relieves me from the necessity of arguing in support of possibilities in this respect.

The companies of the National Guard of our country are generally clothed, armed, and equipped, without any intervention of their captains, except to report its necessity and to give an order for its issue. That ends their connection with it, except to see to its care, condition and appearance.

Still nearer to us, the Corps of Cadets are supplied without

any property accountability or report at all from the captains of the companies or tactical officers. And at the recruiting depot of David's Island and all of the other large depots, the recruits are formed into company organizations with officers in command who are never required to make a Q. M. property return, this being done wholly by the post quartermaster who issues directly to the men.

As implied in my opening words, the key to the happy disposal of this burden is concentration. That is what makes the method I have indicated feasible in every other army and it would in ours. When concentration is sufficiently accomplished, the system can very simply be adopted by an order from the Secretary of War, and will require neither legislation nor appropriation. It would be a long step in the direction of professional advancement, not only emphasizing the personality of the enlisted man,—a purpose in accord with the tendency of modern tactics,—but also giving the line officers more time to turn their studies to the formation of soldierly character among their men. This latter is especially important at the present time, when we consider the liberality of recent orders producing the swiftly recurring incidents of "purchase of discharge," "going out under the three years' clause," etc, which make such rapid changes in the personnel of the company as to entail upon its commissioned strength unusual alertness to give it its proper military character. This latter is no small work. To form men into "excellent" soldiers—our highest grade—implies the formation of many qualities of character, and this with nearly sixty men is sufficient labor in itself for any one captain.

With due conformity to the age in which we live, the sight of the blue uniform of the enlisted man ought to suggest as lofty an ideal as the pictures of the Grecian or Roman soldier; and if it is conceded that we propose to have American citizens become soldiers, reared as they have been in the atmosphere of their educational heritage, then must be emphasized the sense of dignity and worth in the position. So much as to the soldiers. As to the officers themselves, too much sedentary work is now required of them. Too often they are bending over reports and returns, or racking their brains with essays and dry-as-dust text books, when they should be doing active practical professional work. Their existent clerical and scholastic mode of life tends to sap their physical strength and to deaden their soldierly in-

stincts and tastes. The disheartening slowness of promotion is not the only reason why some of them are grey-haired, sour-tempered and suspicious before they attain to the command of a company or battalion. The daily life of an officer should be that of a soldier, and not the existence of a clerk or student. It should make warm blood and steady nerves. It should keep the heart and brain young, and evolve the highest types of military character. The world is cramped with stunted spirits. Army officers should be men of energy and action, sane in mind, sound in body, and ready at the view to jump with eagerness for the emergency that may uplift any day.*

*I desire to acknowledge my obligations to the Report of the Secretary of War and to the Bureau of Military Information of the A. G. Office for valuable assistance received in the preparation of the foregoing.

REMARKS UPON THE ORGANIZATION OF THE ARMIES OF EUROPE.*

BY CAPTAIN J. J. O'CONNELL, 1ST U. S. INFANTRY.

THE English nation, like our own, is and has always been adverse to large standing armies, as is shown in the preamble to the annual Mutiny Act which governed the army of England until 1880, when the "Army Act" was passed. This introduction reads "Raising or keeping a standing army at home in time of peace, unless with the consent of Parliament, is against law."

Unlike other European armies, service in the British army is voluntary, the Englishman not being compelled to accept the Queen's shilling, which is the act that changes the citizen to the status of a soldier,—the badge of servitude,—for service in the ranks is not considered by Her Majesty's subjects, "a nation of shopkeepers," an honored one. However, many sons of gentlemen enlist in the army with the object of obtaining commissions. In 1886 fifty-three sergeants were commissioned; in 1887, fifty-one; and in 1888, fifty enlisted men were promoted into the corps of officers. This is a much smaller ratio in proportion to the total number of officers than that promoted from the ranks in the American army. Graduates of colleges, who satisfactorily pass the required examination also receive commissions, but through Sandhurst and Woolwich is the royal road to the corps of officers. In the Guards, consisting of Horse and Foot and generally stationed in London and its vicinity, a caste is perpetuated, only the elder sons of the nobility and of distinguished officers who have seen service in the crack regiments being admitted. These scions of nobility have the reputation of keeping London quite lively, and being the *crème de la crème* of the English aristocracy they are eagerly sought after in social circles, and frequently to the detriment of their military duties. Social obligations are so numerous and exacting that they find little time to devote to

* This paper was read as a Lyceum Essay and is the result of personal observation while recently travelling in England, France and Germany. It is accordingly divided into three parts, the first of which treats of the British army. J. J. O'C.

their companies, which are too much left to the tender mercies of a tyrannical orderly sergeant or drill-master.

I found this absence of company officers from their troops or companies a source of much dissatisfaction among the Household troops quartered in London. It is believed that this lack of supervision of officers over their men is, to a great extent, the cause of the discontent lately manifested by these troops, resulting in mutinous conduct which necessitated their banishment to the colonies. The young officers of these regiments, notwithstanding the enervation which is apt to be caused by the dissipation of many London seasons, have always behaved in battle as the bravest of the brave.

During the last few years the recruits obtained by the regimental recruiting parties (the system in vogue in the army) are not very satisfactory, and inferior to those obtained in former years. The decline in the quality of the material of the army of which Englishmen had formerly so much reason to be proud, is generally conceded to be due to the small pay of the British soldier. I saw a company of the Chichester Regiment drill in the enclosed yard of the White Tower, where it performed guard duty, and it was composed of mere lads. Even with beardless youths it is found impossible to keep the military establishment up to the limit authorized by law. In 1892 it was 1500 short of the required strength.

The term of service is twelve years,—seven or eight of which are with the colors, according as the service is at home or abroad,—and one half of the battalions are supposed to be sent abroad during their term of enlistment. In the Guards and departmental service men serve with the colors three years, and the remainder of the twelve years is served as citizens, with the Army Reserve. Service in a regiment for a definite period is termed in England, "serving with the colors." You serve with the colors in time of peace, but you do not fight with the colors in war times, for the very sufficient reason that under present conditions of low range, rapid and accurate firing, it would be simply criminal to order a sergeant into line of battle bearing the colors.* The arms of precision of to-day have done away with the gallant old custom of rallying round the flag when in close proximity to the enemy. A pole will do as well for that purpose, and bet-

* Hence by our present drill regulations also, they are properly relegated to the rear.

ter, inasmuch as it presents a less conspicuous target to the enemy.

The pay of a private is twenty-five cents a day, which he receives daily. Six cents out of this must be paid over to the sergeant every morning for the company mess, as the government only gives him three-quarters of a pound of beef and a pound of bread for a daily ration. This part of his pay must procure what the American soldier is bountifully supplied with by his country, viz.:—Coffee, sugar, vegetables, and the other component parts of the ration. The English soldier ought to be supplied with these necessary articles by the government without having to pay for them. He is not even furnished plates to eat from; these must also be purchased out of his paltry shilling a day.

The Canteen system, or as we will have it, though with questionable refinement, the "Post Exchange," is universally established in the British army. The general opinion of officers and men, to whom I have spoken on the subject, is that it is an indispensable assistance to a soldier's comfort and therefore contentment. By this system a soldier can spend his leisure moments in a nicely furnished club-room, for such is always a necessary addition to a well-regulated canteen, and enjoy his mug of ale which he gets for a penny, or order a substantial repast of ham and eggs, or hot sausage with butter and other luxuries, for two pence. One day on returning to Aldershot from a brigade review and inspection, I took occasion to enter one of these establishments and called for a drink of ale. Being in citizen's dress I would have been refused the refreshing beverage had I not explained that I was also a soldier but in foreign service. I found it exceedingly good.

Our post exchange system, though at present much inferior to that of our English cousins in comfortable and athletic appointments, things which will be supplied in time, is much superior if judged from the standpoint of dividends; for our soldiers directly reap the profits accruing from the expenditure of their own money in the shape of monthly additions of from thirty to forty dollars to company funds, which are expendable only for messing purposes. This very commendable result is due to the careful administration of its internal economy by the canteen officer, directed by the exchange council. These safeguards are not adopted in the British system, for a steward manages the concern and the bulk of the profits as well, so that the company messes

show little signs of material additions to the bill of fare arising from canteen profits.

In the time of "good Queen Bess" a company of infantry consisted of a captain, two lieutenants, two ensigns, three sergeants, three drummers, and a hundred privates. When on duty the captain carried a fourteen-foot pike; lieutenants, partisans, and the ensigns, halberds. The men were armed with swords, besides which some carried pikes, others matchlocks and firelocks.* To-day a company consists of one captain, two subalterns, four sergeants, five corporals, and, in war, of a hundred and fifteen privates. The infantry is armed with the Lee-Speed magazine rifle, detachable type, cal. .303, magazine holding 8 cartridges, sighted for 2800 yards, point-blank range 500 yards, the greatest altitude of curve at that distance being five feet. It is claimed to be one of the most destructive and serviceable of modern inventions of this kind.

A regiment consists of eight companies divided into two battalions of four companies each, and on a war footing comprises thirty-one officers, which includes a paymaster, quartermaster, medical officer, and a captain adjutant; fifty staff sergeants and non-commissioned officers and sixteen drummers. Total number of officers, non-commissioned officers and privates, 1097. The regiment is commanded by its lieutenant-colonel, and each battalion by a major.

A brigade consists of two or more regiments united together, and is usually commanded by a colonel with the rank of the lowest general officer (brigadier-general) assisted by a brigade major as staff officer.

A division,—the real tactical unit, because it can fight independently, having the three branches of the line united,—is composed of two or more brigades of infantry, two or more batteries of artillery, a company of engineers, and one or more regiments of cavalry, and numbers 299 officers, 9403 non-commissioned officers and privates, 1862 horses and 18 guns. It is commanded by a major-general.

A corps is composed of two or more divisions and is commanded by a general or lieutenant-general. It comprises 1082

* Tactics in those days consisted in boldly advancing on the enemy, not in seeking cover and cautiously approaching by a series of horizontal projections called *rushes*, a style rendered imperative by the introduction of new and improved machinery for killing.

officers, 32,540 non-commissioned officers and privates, 9376 horses and 90 guns.

The army is commanded by His Royal Highness the Duke of Cambridge, who is controlled in all matters, except military training of the army, by the Secretary of State for War, as the American commander, General Schofield, is by the Secretary of War. In France and Germany these important positions are almost invariably held by military men of high rank and attainments, who are the advisers of their respective governments on all matters relative to military affairs. These governments, whenever they wish to be informed on military matters, are accurately and intelligently assisted in that direction by competent officials, who are the most reliable and prominent in the profession of arms; whereas in England and America these offices are held by citizens. This is not as it ought to be, and the sooner the example of France and Germany in this matter is followed the better it will be for the military establishments of both countries.

The latest official statement of the numerical strength of the British army, made by Lord Wolseley,—the late Adjutant-General and now commander of the forces in Ireland,—is as follows:— Cavalry, 20,896; infantry, 141,602; artillery, 35,902; engineers, 7420; colonial troops, 5239; departmental corps, 9702; staff of militia and volunteers, 6934; miscellaneous establishments, 857. This gives a total of 228,552. The first class of reserves consists of about 80,000, which added to this total, gives a grand total for the standing army of 308,552 men. The number of guns on a peace footing is 600, to which 50 can be added in time of war. Of this army 72,648 men, 11,303 horses, and 318 guns are in India; 36,126 men and 947 horses are abroad elsewhere, and the balance are at home. In addition to this, there is an Indian regular army of 21,700 native cavalry, 109,000 native infantry, and 2000 native artillery, all under the command of 1411 British officers. With the exception of 48 mounted guns, all the artillery in India is now English. It will thus be seen that India is held by an army that is about 36 per cent. English and 64 per cent. natives. Of the above it is doubtful whether the Horse Guards could put 90,000 in the field in the case of a continental war.

Besides this standing army, England can mobilize for home defense:—

Volunteers,	260,000
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Militia,	108,000
Militia Reserve,	30,000
Yeomanry (Cavalry),	11,000
Or a total of	409,000

which, with the standing army, make a grand total of 850,000, the available strength of the British forces.

There is not a staff corps in the sense of *Etat Major*, in the British organization, as there is in the French and German armies. The officers of the Control Department, corresponding to the quartermaster and commissary departments of our army, are officers of the staff, but not staff officers: the duties of the latter being distinctly military, whereas those of the former consist in supplying stores of every description, both *munitions de guerre* and *de bouche*.

The artillery is formed into a corps and is commanded by a general officer, which arrangement I think is much better than our division into five regiments. The royal artillery is the *elite* corps of the British army.

Many of the old familiar and time-honored names of regiments are fast disappearing, only a few being now left, as the "Bufs," "Black Watch," "Enniskillens," "Scotch Grays," and a few other names famous in the bloody pages of English history. The name "Grenadier" is still preserved, although the practice of throwing grenades in battle has long since been abolished. The Grenadier and Coldstream Guards are the two finest regiments I have seen in Europe.

The Irish Constabulary,—a local semi-military organization, consisting of 10,000 picked Irishmen,—is a superb body of men, which for physical manhood and fine military bearing is unsurpassed in Europe. I believe the British army contains within itself the best fighting elements in the world, viz.:—the bulldog tenacity of the English, the impetuous gallantry of the Irish and the indomitable pluck of the Scotch. Fifty thousand such men, ably commanded, will whip an equal number of any army in Europe under equal circumstances.

The army finds in India and the colonies an excellent and diversified school for war. In this respect it has an immense advantage over Continental armies, for no matter how extended their autumn manœuvres may be, they do not impart that self-command, reliance and coolness in action, that being actually

under fire invariably gives. It is seldom completely inactive, for whether in India with the mountain tribes, in Burmah with the Dacoits, or in Africa and Australia with Bushmen, it is continually having a brush with some sort of enemy in some part of the globe. This active and varied experience enhances greatly the efficiency of the British army. Meanwhile the home battalions are by no means idle; they too have their practical school for war which, if not quite so realistic as that of their fellows in the colonies, is very thorough and effective.

Not far from the suburbs of London is the village of Aldershot, contiguous to which lies the famous Tichborne estate, fifteen miles long by five wide. This property has been thrown into the Court of Chancery pending the memorable legal contest for its possession. In the meantime the government has taken possession of it and uses it for the summer exercises of its regular and citizen soldiery. The estate is divided into three camps,—upper, middle and lower,—at each of which permanent barracks have been erected of sufficient capacity to quarter a brigade. Here the home battalions of the standing army, reserves and volunteers, are ordered to assemble every year for target practice and regimental, brigade, and division evolutions, interspersed with numerous sham battles, in which the three arms participate.

I noticed that some regiments were quartered in this wise:—A battalion on each side of the street and extended along the same, the upper story of the barrack on each side being connected by a roof, thus enclosing the street, except the entrance and outlet, a good scheme in case of rain, which is not infrequent during summer months. On one occasion I was present at the drill of a light battery, and afterwards at the inspection of stables, quarters and mess. The snap and precision with which the movements were executed, were admirable. The inspection impressed me as being very thorough and severe, the horses strong, fine looking and well attended and cared for; the messing arrangements, from an American view, were very inferior. As the inspector entered the mess-hall he was saluted by the sergeant in charge and greeted with the assuring terms “No complaints, Sir.” It appeared to me that there were grounds for much complaint, especially in regard to the quantity, quality, and variety of the food, and the cleanliness of the room and appointments.

I witnessed also the grooming of a cavalry regiment on its re-

turn from morning exercises. A subaltern and three sergeants superintended the work. No horse was considered groomed until he was led before one of the inspectors who carefully examined him, and if a hair was out of place or the least trace of dust noticeable or discovered, he was ordered back for further action. I observed that many of the cavalry regiments were armed with lances; the troopers were men, not striplings, as is too often the case with their neighboring infantrymen.

The work done at Aldershot is thorough and effective, and the only fault I find with the system of instruction is that the time devoted to it is too short; and yet a fortnight is double the time given by our National Guard to military exercises in the different State encampments. The art of killing people may be learned in a shorter time, but the art of doing it scientifically cannot be. The English officer may not study the art of war as indefatigably and critically as his German brother, but he is equally ready and eager to lead men in battle. He is not a swordsman,—they possess a monopoly of that art on the continent,—but he is an adept in boxing, riding and shooting. He is, *par excellence*, an athlete, naturally inclined to field sports and instinctively a hunter. He is to be found in every quarter of the globe in pursuit of big game; in the Yellowstone Valley, the Pampas of South America, or, like Lord Randolph Churchill lately, killing lions in the heart of Africa. He is equally at home, and as keen after big game, in the luxurious drawing-rooms of the metropolis. It is in this varied theatre of operations that the young guardsman takes special delight in the earnest study of strategy, and aims to "max it" while the sun shines. This is unquestionably a much more congenial and less dangerous occupation than that allotted by fate to his brother officers, banished beyond the limits of civilization, to service in the colonies.

There are, and have been from time immemorial, two distinct classes of officers in the British army. They are to be found in all armies. Those of one class are inclined to look with disfavor on any measures tending to the higher education of officers, but content themselves with a reasonable amount of accuracy and fidelity in the execution of the daily routine duties of garrison life, are woefully behind the age in all things relating to their profession, and rely, for success on the battle-field, on bravery and blind chance. These men are not students, but they pride themselves on being intensely practical, and in support of their anti-

quated views are constantly parading the fact that Marlborough and Wellington beat the finest armies of France, and that Blücher, one of the best officers of his day or any day, could hardly read or write. This class is emphatically conservative, and embraces the majority of the older officers. The other class, consisting of the great bulk of the younger men, stands on a much higher plane. They aspire to make the profession of arms, in all its collateral branches, a life-long and earnest study. Their motto is "Onward," and they aim at mastering the most minute details of their profession, scientifically as well as practically.

A powerful impetus has of late been given to the acquirement of scientific knowledge in connection with every department of the military establishment. This tendency is universal to-day in all armies. The officers of this class encourage the adoption of new ideas, and keep abreast with all the modern improvements and discoveries in the art of war. They favor the selection for promotion of able and hard-working officers over the non-efficient and careless. They consider the system of promotion by seniority alone as destructive of healthy emulation, and therefore a serious drawback to general efficiency. This class are alive to the necessity of carefully studying the history of recent wars, the new conditions of battle arising from the new and improved implements of war, and of diligently training the army to meet intelligently and successfully the changed conditions of warfare.

England's great power is afloat. She bears the proud title of "Empress of the Seas," and the truth of the old saying "Britannia rules the Waves," has never been successfully disputed, although she has suffered at various times some crushing defeats on that element at the hands of her American offspring. Her insular position precludes the necessity of a large standing army, but emphasises that of keeping a large one afloat to maintain her supremacy on the ocean, and strengthen her authority in the colonies situated in every quarter of the globe. England's rock-bound coast, surrounded by a magnificent fleet, constitute a bulwark of safety against foreign invasion, and in reliance upon these she rests tranquilly and securely at home. The gentlemen who preside over the destinies of the nation in the venerable halls of Westminster, and who direct the action of their martial *confrères* at the "Horse Guards" across the way, are in great terror lest the projected tunnel from Dover to Calais should some day become an accomplished fact, and thus neutralize the protection afforded by

a naturally strong defensive position, and render comparatively useless their powerful fleet. In this possible contingency lies the secret of the bitter hostility to the scheme manifested by Gladstone, the Duke of Cambridge, Lord Wolseley, and other high officers of the Crown. In their fear of a hostile underground invasion, they underestimate the security which lies in readily flooding the passage way before the invading hosts could possibly reach the shore of England.

The system of infantry drill in the British service, or as we will have it, "drill regulations," of which the following is a synopsis, is very much the same as ours, the difference consisting in minor details and the adaptation of certain words and phrases to commands which are of long standing in both countries. The origin of the two seems to be the same, for both appear to have been bodily extracted from the French or German systems. This is especially true in regard to Extended Order, in both armies.

The British recruit is very thoroughly drilled for about three months before he is reported fit for duty. To initiate him into the mysteries of marching, it requires drum, plummet and pace-stick; the one to beat 120 per minute, the other to gauge time and the last to measure the 30-inch step. After practicing this for awhile, he can march at the rate of $3\frac{1}{2}$ miles an hour. Right, left and about turn, are the same commands as our right, left and about face, the execution being entirely different from ours. The men are at first drilled in single rank with an interval the length of the arm, afterwards in single and double rank in which each man is allowed 27 inches front space. The ranks are five feet apart from heel to heel. "Stand at Ease" is our "Parade Rest," and "Stand Easy" our "At Ease." Our "Right Turn" is their "Right—Form," except that they mark time and do not take the short step when arriving on the line successively, which I think is better when the area of the drill ground is limited. Our "Without the numbers" is their "Judging time." At "Open order. March," and "Close order. March," the rear rank moves two paces to rear or front. To reverse the ranks so that the rear becomes the front, the command is "Change Ranks," at which the squad turns about. To form fours to the right, the files having been counted off in whole numbers from right to left, the command is "Form Fours," at which they face to the right and double up, the even numbers taking place on the left of the odd numbers,

as in "Hardie's Tactics." The men fall in at a carry, and the manual of arms include "Order Arms," "Right Shoulder Arms," "Slope Arms," "Present Arms," "Trail Arms," fixing and unfixing bayonets. Arms are presented from a carry or an order and returned to these positions. The command for firing is "Ready, present, fire." Ranks are opened and closed and men are passed in review with arms at a trail. There are no seventeen-setting-up exercises to weary the British recruit. His "setting up" is effected through what is called physical drill, which corresponds with our bayonet exercise. The company is formed like ours, being divided into squads, and has seldom more than 40 men available for drill in the peace establishment.

The position of the captain is six paces in front of his company in line and three in column. The company is formed in three ranks,—front, rear and supernumerary,—the last corresponding with our line of file-closers. In our army, officers give commands with their swords drawn; British officers draw theirs only when the men fix bayonets, when compliments are paid, and on occasion of ceremonies. In company drill the movements are few and simple, such as forming from column into line to the front, right or left; moving and changing direction to front, rear and flanks; and breaking into half companies (platoons) and sections, and reforming company. There is no elbow play in dressing, the men having been taught to dress in their recruit stage. The captain in bringing his company into line gives the commands, "Halt—front—Right dress," at which the right guide dresses the company and then gives the command, "Eyes—Front."

The English battalion, which corresponds with our regiment, is formed somewhat like ours. Our battalion is the English half-battalion. The English battalion in line differs from ours, inasmuch as the band is posted in rear of its centre, and that it has what we have not,—a line of cyclists and a machine-gun with its mules and transport wagon, also in rear. The color guard consists of two officers who carry the colors—the Queen's on the right—and a sergeant between them, the rear rank consisting of two corporals or selected privates with a sergeant in the centre. The colors are between the two centre companies when the regiment is in line. The interval between companies is 6 paces, between half-companies and sections 2 paces. Our close column is the English "quarter column," in which 10 paces is the distance

between companies. The word "Steady" effects the object of our "guides posts."

The English battalion drill is much more simplified than ours. There are but twenty movements while we have at least sixty, of which I think a few could advantageously be omitted. Close column can be ployed on any company, but always in rear of it, and deployed from the designated company. A battalion marching in line may be marched to the front in column of companies on any company of the regiment or battalion, depending on the location of the obstacle to be avoided. If the obstruction is in front of the centre and left flank, and it is expedient to continue the march to the front in column of companies on first company, the command would be, "Column of companies on first company, fours right, March." The Englishman's command would be, "Column on one, remainder form fours, March." Our "Change direction by the right flank" is their "Change front right," and is similarly executed.

In the British army companies and battalions are drilled in single rank for the sake of practice and instruction when there are not sufficient men for double rank formation. This is as it should be. "Extended order" is known as "Battle formation" in the British infantry drill, and is very nearly the same as ours, with few minor exceptions, viz.: the extension is made on any number of the squad, as is the assembly. In extending as skirmishers the rear rank men take place on the left of the front rank men. The whistle is used for "Cease firing" and to attract attention to orders about to be given. The "rally" with the English is a formation against cavalry; with us its use is intermediate, since it is discouraged against cavalry. At the command, "To the charge," our officers have apparently nothing to do, whereas in the English drill, at the command, "Prepare to Charge," officers and chiefs of sections are required to run to the front of their respective commands and lead them to the charge. This is the proper position for an officer in the charge.

The captain is responsible that every man of his company when engaged has on him 100 rounds of ammunition for the new magazine rifle. The battalion commander is responsible for 85 rounds to each man in his command, besides the 100 they go into battle with, and the brigade commander must see that the brigade ammunition column and ammunition park can supply 135 more to each man, so that there is always a supply of 320 car-

tridges for every man. There are no arrangements in our drill regulations for supplying ammunition to men in action—a very grave omission.

Ceremonies, reviews and inspections are very much the same as ours, with the following exceptions: The greatest accuracy is enforced in movements of ceremonies, forming a marked distinction from movements of manœuvre, and there are no spaces between companies. The most pompous ceremony is the Royal Review, in which Gold Stick in Waiting holds the thirteenth place in the order of march, which, let us be thankful, we cannot add to the rest of our importations. The English people, though not a war-like nation, take great delight in martial pomp and display, and pay heavily for the right and privilege of having a Royal Review. The spirit of respect and allegiance of the people to authority is being severely tested at present through the general diffusion of socialistic doctrines, the tendency of which is toward the feeling that Jack is as good as his master. This spirit, destructive of all discipline, has recently made its appearance among the rank and file of the British army, as recently exhibited by one of her Majesty's crack regiments quartered in London, on the occasion of one of its officers being sneered and hooted at while leaving the barracks.

The English soldier is quite a swell fellow in his well-fitting and handsome scarlet uniform, skull cap jauntily resting on two hairs on the left side of his head, gloved and chin strapped, as he leisurely saunters along Regent and Piccadilly streets, giving a benefit to his gaping country cousins and staring cockneys. But too soon is the scene transformed, and we find him in the colonies under different circumstances, enduring with the utmost fortitude all sorts of hardships and privations, combined with the most active military duties. He cheerfully submits to the change from a life of gayety and pleasure in London to that of exile and attendant unpleasantness in the enervatingly torrid climate of Calcutta, or to one of arduous duties, constant vicissitudes and imminent dangers in the wilds of the Punjab. It is in this kind of service that the brawn and sinew of the Anglo-Saxon stands out prominently and proudly in contrast with his surroundings, and in keeping with the duties required of him be they ever so exacting and onerous. Service in India is very similar to that of our army in Arizona, New Mexico and the fervid regions bordering on the Rio Grande. It is rated at the "Horse Guards" as

one of the most trying character, and officers and men are correspondingly better paid than those serving at more favored stations at home. Fortunately, service abroad and in undesirable stations, is, as with us, a matter of rotation, and, unfortunately, sometimes of political influence. And yet the pecuniary advantage in pay and emoluments of Indian service is such, that very many of the younger officers apply for the service, and thus a system is maintained whereby the native troops are drilled and commanded by English officers, which adds largely to their efficiency and loyalty. According to the provisions of a recent enactment of Parliament, tending to facilitate promotion and promote the efficiency of the army, officers who do not attain a certain grade at a determined age are retired. It is obvious that many officers thus retired from active service in the line are both mentally and physically qualified for further military service. The ability of these officers is not lost to the Government, for they are usually detailed, and frequently with higher rank, for service with the reserves and volunteers, and are thus retained on the status of active service with full pay. This system is productive of much good to these organizations, and I think the introduction of a similar plan in our service, whereby many of our retired officers can be detailed for active duty with the National Guard of the States, on the applications of the Governors of the several commonwealths and on the status of full pay and commutation of quarters, would be of the greatest advantage both to our National Guard and to the regular army. To the National Guard for it would give them the inestimable advantage of having zealous and efficient instructors, and to the army for it would become more popular, inasmuch as it would be more extensively and more favorably known, and would, therefore, have the respect, confidence and support of the great and influential body of our people—our citizen soldiery.

EXPERIENCE OF THE PAST THE BEST GUIDE FOR THE FUTURE.

BY LIEUT-COL. J. G. C. LEE, Q. M. DEPT. U. S. A.

IT is an oft stated and well-established maxim that nations partake largely of the characteristics of individuals.

This must necessarily be so, inasmuch as nations are made up of individuals and have therefore, in reality, the composite character of those individuals, much as the composite photographs of groups of persons represent the average physiognomies of such groups.

It must be true wisdom, then, for nations, as well as men, to indulge in retrospection, thereby to gain knowledge from experience and history for their guidance in the future.

The attentive consideration of our past history shows that as a nation we have always been ill prepared for war. We were for the Revolutionary War, the War of 1812, the Mexican War, and notably so for the War of the Rebellion. For even the greater Indian wars, previous preparation has been lamentably inadequate. Illustrative of this, it will be hard for the present generation of men to realize that only 32 years ago this nation sent soldiers forth to do battle, with the flint-lock musket.

And what has been the result of such lack of preparation? The wars have all been longer, more costly, more disastrous, more destructive of life and property, in every way more distressing, than if we had timely heeded that old, suggestive and trite aphorism "In time of peace prepare for war," more honored, I regret to say, in the breach than in the observance.

War establishments, whether of land or sea forces, are necessarily expensive, but the burden is far more lightly borne when surrounded by the joys and blessings of peace, than amid the horror and sorrows of war, and only by previous preparation will the nation be saved the humiliating spectacle of its forces beaten back and dismayed, or possibly yielding to an inglorious peace. Will you tell me the picture is overdrawn? I answer it is quite the reverse; for though we are in a measure exempt by reason of our position from attack by the great military nations, it is yet possible for

them to combine in such a way as to deal us speedy and deadly blows from which we may not escape, nor soon recover.

We all know, or should know, the desperately exposed condition of our seaports; while our infant modern navy, superb as it is, is not yet equal to fully protecting our shores from destructive incursion of the great navies of the old world.

Our seaports are the great arteries of foreign commerce, and anatomists tell us that the destruction of large arteries means loss of life.

It is idle,—I might almost say senseless,—to rely on position, or that other phantom, arbitration, as our bulwark of safety. Our safety, our existence, and our perpetuation depend on our strong arms and stout hearts,—on our established military capacity and power of wielding it. For other nations must exist, and the race is to the strong. They grasp for sustenance and safety with little less eagerness than the drowning man at the straw. And the all-powerful spirit of empire and domination stalks ever upon earth. Be not deluded, my countrymen, nor lulled into a false security from which you may waken to see your proudest and best beloved walk forth to unnecessary slaughter, your fair fields laid waste, your noble cities destroyed, and your commerce swept from the face of the globe.

I ask you to go back with me thirty-two years to the outbreak of the great Civil War of the Rebellion, and see a nation reposing in the smiles of peace and plenty, the martial spirit at lowest ebb, the readiness for war almost beneath contempt. Do you think that any section of our country would have *dared* to enter into armed rebellion had we had a national force of 40,000 or 50,000 well armed, well equipped, well disciplined men? Was it not worth many years of patient and studious preparation, the few millions annually necessary, the increase of force requisite to have averted that great calamity of civil war and the terrible loss of life and treasure on both sides, amounting on the Union side alone to 359,496 who were killed in action, or died from wounds, disease, etc.; 246,712 wounded to extent of requiring treatment in hospital (the slightly wounded not being included); with somewhat over six millions treated for disease; making a total of sick and wounded of 6,454,834; and over six thousand millions of dollars in money, besides vast values in property, the extent of which cannot be determined nor told?

Added to these is the enormous pension roll, reaching now

almost two hundred millions annually, that has already cost somewhere about three thousand millions, making a total to date of some eight thousand millions in money alone,—enough to sustain the extra force adjudged necessary for reasonable safety, both by land and sea, for several centuries. Indeed, many estimates make the total cost of the War of the Rebellion, to date, over nine thousand millions, to which must be added the annual pension list for many years to come. Think, too, of the homes destroyed, the sorrow and suffering of it all. And then answer, was it not worth while to avert all this loss, all this sorrow, all this slaughter?

How nobly, how grandly, the nation's sons responded to its needs may well be our pride to-day and for all time. The martial spirit only slumbered, it had not wholly died out. The spirit of the free men who decreed the birth of the nation still flowed in the blood of their sons, and a great army came from the field, the counting-house, the workshop, the forest and the mine, ready to spill their blood that this nation should live on. How patiently, how laboriously, how heroically they gave themselves to the sacrifice, only those who saw it, felt it, realized it and shared it, can best understand and bear testimony.

And when it was all over and the graceful fabric of the Union reared by our fathers of the Revolution was sustained, strengthened, built all around by enduring, supporting walls; its base widened, deepened, and firmly set upon the foundation rock of eternal justice to all men, freedom for all, equal rights to all; after the struggle was over, then they laid down their arms and returned to the peaceful pursuits from whence they came. History affords no instance equal in sublimity and magnanimity to that of the armies of the Union laying down their arms, and quietly resigning to the hands of statesmen the glory, honor, trophies and results of a great war.

And the nation in its gratitude, and realizing its debt, gave honors to the leaders, and thanks to that army, behind which it had stood trembling for four long years.

No reasonable military measure was refused by Congress, and, with a realizing sense of the condition of affairs at the outbreak of the war, and the manifest needs of the future, the army was placed on a footing more nearly commensurate with the requirements of the country.

Gradually, however, the security of peace abated the martial

spirit of the people and their representatives in Congress, and slowly but surely we have drifted into forgetfulness of our great peril, our desperate struggle, our terrific losses, and our unfathomable sorrow. So great was that peril, so desperate that struggle, so enormous those losses, and so unutterably deep and vast that sorrow that the very fate of the nation, just now beginning to tread firmly the lofty heights of greatest power, majesty and influence, this grandest Republic of all time, this beloved and glorious Union, hung oftentimes by but a slender thread, which was only saved from breaking by the superhuman efforts of the leaders, and the sublime valor of the army and navy.

Steadily have we receded from the martial spirit and glory of those days. The trend of events is toward the pursuits of peace, and we are gradually becoming more and more indifferent to the security of our future. The great Civil War, its memory and its lessons, are passing into oblivion, and we repose in the lethean slumber of present peace and luxury, forgetting the teachings of all the past and the admonitions that history gives us as to the future, and the heaven-born duty imposed on us to strengthen, defend, and perpetuate the best government on earth, and hand it down to our children in all the power, influence and security of existence that it is possible for us to gain and to give, by every effort of statesmanship, military genius, and that wisdom for the future that is so surely garnered from the past if thoughtfully considered. History and our children will rightfully and sternly hold us responsible that we do this, and it is incumbent on those who are more directly brought face to face with all the conditions, to point them out to those who by nature of their occupations are less likely to give the matter that consideration that its great importance demands.

To the rising generation we men who wear the button of the Loyal Legion, whose brows and heads bear the snows of many winters, or those bent and grizzled forms of the Grand Army men, mean but little. They, forgetting our work, speak lightly of it and regard us as "old timers," "back numbers," possibly even as "mossbacks," whose period of usefulness is well-nigh spent or wholly gone.

This is largely the natural course of things. "The old order changeth, giving place to new and God fulfills himself in many ways." Those who have done their work must ever give way to the young, fresh and vigorous, who are ready to take up

the burdens. Theirs become the struggle and the strife, the heat and burden of the day; ours the part to point out the way, to steer them to this well-known channel of safety, to warn them of those rocks and reefs and shoals on which the ship of state may be wrecked.

Second only to those who gave up their lives that this nation should not perish, and in their stead and for them, it is the right of those who stood shoulder to shoulder with them to speak in trumpet tones of unmistakable meaning to those rising to the sphere of action in the field of public usefulness, whether of statecraft or of national defenders.

There can be no question of the patriotism of those who wear the buttons, whether of the Loyal Legion or the Grand Army. *They have been tried in fire and not found wanting.* They have grown old in experience and service, and their wisdom is worthy of all confidence.

Our duty thus done for the future, we commit to the hands of our successors the grand and noble heritage of this fair land. Its growth has been marvellous,—its future will not be less so. Its opportunities for strengthening its life, its power and its influence are and will continue to be exceptionally grand and great. They must not be missed. The arms and hearts of our people, always open to the oppressed of all nations, are capable of taking in whole nations when they knock at our doors and are worthy. And the future of our commerce on this coast and the whole nation demand that we shall own and control the greatest artificial waterway of the globe, now lifting itself from theory into reality, and becoming a matter of paramount importance to our country.

We can point to the past and our part therein with a lofty pride, and it is much to have been permitted to share in the glory of having solidified this Union.

Having committed to succeeding hands our great trust, unsullied and strengthened because of our work; having faithfully instructed and warned those who come after us; our duty is done and on them must rest the burden of future national glory and greatness.

NOTE.—This paper was prepared to be read before the Military Order of the Loyal Legion at its annual meeting in Los Angeles in March, 1893. Being ordered away, I have decided to send it to the Military Service Institution.

J. G. C. L.

DRILL.

BY CAPTAIN C. J. CRANE, 24TH U. S. INFANTRY.

“THE object in view in drilling men is not merely to ensure the execution of certain formal movements on parade under favorable conditions, but to give them true discipline, *i. e.*, the spirit to face heavy loss without flinching—the one thing, in fact, which constitutes the superiority of a body of soldiers over an armed rabble.

“There is, in fact, a close analogy between drill and mesmerism; in both cases the patients resign their wills into the hands of the operator, and in both cases, ultimately, the will of the operator or commander becomes stronger than the natural disinclination of the subjects to do what is required of them.

“This explains why men will always drill better under an officer whom they feel is in earnest than for one whom they know to be taking no interest in it.

“A horse is, in fact, even more susceptible of discipline than a man; for, though naturally far more timid than man, when once thoroughly trained, even when deprived of his rider, he will keep his place in the ranks, in spite of the dangers which surround him.

“It is this that renders steady drill all important, as it enables us to overcome the natural instinct of self-preservation, and makes it easier for men to obey the will of another than to make up their minds to run away.

“The necessity of such drill is greater now, perhaps, than at any former time; for the mental strain occasioned by a breech-loading fire is far heavier and of longer duration than that produced by a muzzle loader.

“Troops no longer fight in line, it is true; but to bring them up to the shooting line they must all pass over a fire-swept space, either in line or in a formation in which the maintenance of discipline is even more requisite and at the same time more difficult.”*

The foregoing quotation very ably and concisely presents the

*Captain Maude, R. E., on “The attack formation for Infantry.”

proper relation between drill and discipline, also the urgent need of much drill and the proper kind of drill, especially under the present conditions which obtain in civilized warfare. While drill is not the only condition to be desired in order to bring a body of men to the proper state of discipline,—given two organizations equal in every other respect, the one which is best drilled is just so far ahead of the other in discipline and fighting capacity. Moreover, drill will compensate for the loss of other conditions which may not be obtainable.

The requirements of discipline in the present day demand excellence in a kind of drill differing from the three essentially different styles practiced under Frederick the Great, during the French Revolution, and under Napoleon. The lessons of our fratricidal war of thirty years ago have not as a rule been properly understood or appreciated by foreign writers, and the gap between the present time and 1865 as regards the knowledge of war obtained from the battle-field, is not so startling as they would have us believe. So that it is not believed that we have been sleeping over the volcano of ignorance, and it is believed that, for the infantry, we have in the present drill regulations ideas well presented and far advanced, needing only honest application on the drill ground and in large manœuvres, to put us fully abreast of the world.

Thirty years ago the armies which Von Moltke is said to have described as "armed mobs" suffered, victoriously, greater losses than those which stopped the Prussian Guard at St. Privat, and if we keep the regular army up to the proper degree of discipline, as obtained from intelligent drill and the proper care of the enlisted man, the nation's army, leavened by us, will do just as well again.

The object of the present article is to present the ideas of the writer as to the manner of drilling, and the amount of it believed to be necessary to make us sure of the desired results,—those which must obtain from well-drilled organizations. As long as officers and men are conscious of improvement, there is no flagging in the interest taken by them in drilling. Then it is necessary for instructors to give such a drill as will keep up the improvement. We do not need to go outside the new drill regulations to find all the variety we could wish, but have only to teach systematically and thoroughly the lessons there given us. The new book is not without faults, but it is believed that most of

them will be removed as soon as we have given them the test of a fair trial on the drill ground, and in manœuvres on a larger scale. Instruction in the company school-rooms and officers' lyceums should thoroughly ground officers and non-commissioned officers in theoretical knowledge, which requires much and careful application on the drill ground. The suggestions given as to the amount of drilling believed to be necessary, are not intended to apply to the first year with the new text, but to the next and succeeding years. We will then start in with many erroneous ideas corrected by study and discussion of the new book, and much time spent in drill. The beginning of a proper drill, both for officers and non-commissioned officers, is study of the text and recitation upon its contents, thus ensuring a common construction being put on many points wherein opinions might otherwise be as numerous as men. In the officers' lyceum, for several years yet, parts or all of the drill regulations should be recited upon. In the non-commissioned officers' schools this should also take place, year after year, varied with study of the guard manual and, perhaps, parts of the regulations.

The non-commissioned officers should be instructed with the greatest care, both with and without arms, being required to illustrate with the rifle their ideas as to the manner of executing the manual of arms and bayonet exercises. This will greatly assist in giving uniform instruction to the different squads of the company in those exercises where the squads are drilled separately. The necessary theoretical instruction having been imparted, exercises on the drill ground may now begin with all organizations serving at the same post.

Drills are much needed before the annual course begins, owing to the close connection between drill and discipline. Discipline suffers when long periods elapse without drills, and nothing so quickly straightens out a command after field service or other absence from drills, as a few days spent in the school of the company with a strict instructor. Even at the Military Academy this is very noticeable, although cadets have every incentive to behave properly without being made to do so. In order to keep the non-commissioned officers up to the mark as regards their knowledge of the drill regulations, as well as for the proper instruction of the privates, the year's course of drills should always begin at the beginning, omitting nothing. The setting-up exercises should be carefully and thoroughly taught, no man being

excused from them, some of the oldest soldiers at each post being among those who need these exercises the most. The same remark is equally true with reference to instruction in all the exercises and movements given in the school of the soldier, with and without arms. There should always be an officer present to superintend the squad drills of each company; study of the drill regulations and recitations in the officers' lyceum should insure a common construction of its different parts by all the company officers, but, in any case, it is the company commander's duty to see that his squads are properly drilled and if *his* presence is always necessary to bring about the desired result, then he must be on the drill ground and not trust this duty to any other.

Each squad should be observed carefully, and the methods of the non-commissioned officer drilling it watched, to see if the proper instruction is given and properly received and obeyed. In case the instructor makes a mistake, wait a little while to see if he will not correct it himself, since his error may have been only a slip of the tongue which he will himself correct at the first opportunity. But the squad should not be dismissed without the instructor being notified of his mistake and directed to give the proper instruction. This of course is not to be done in the hearing of the squad, for above all things the instructor should be upheld in his position, which is not to be belittled in the slightest. And since the respect which the private will give his corporal or sergeant on the drill ground must greatly depend upon the deference he must show him in the company, the authority of the non-commissioned officer must always be upheld unless he is outrageously in the wrong. The private is often purposely irritating to his non-commissioned officer—especially while being instructed in some duty—and may thus cause the latter to lose his temper and overstep the proper bounds; but so long as the object of the non-commissioned officer is a proper one, his position should be maintained and his authority upheld, even if it should happen that he has erred as to the manner in which he has given his instruction or asserted his authority.

Years ago this was one of the first lessons taught the young officer as to his dealings with enlisted men. When the non-commissioned officer errs, his officer should inform him privately and instruct him as to the proper course, unless the case should demand a hearing before a military court when this too should be

promptly attended to, but in such a manner as to show, if possible, that the man and not his office has been found fault with.

But to return to the drill ground.

Instruction in the school of the soldier should be made as thorough as possible, each squad being made to execute any movement or exercise over and over again during the drill, until such exercise or movement seems to be well understood and is executed properly. The manner in which the squad will execute any movement will very much depend upon the manner in which the commands are given. This is true in every drill in any school of the drill regulations.

Almost invariably the intonation of the instructor's commands will show whether or not the instructor is deeply interested, certain that he is right, and means to be obeyed; the commands given will be executed in the spirit which animates them. Really if there is a secret in drill it is that and nothing more. The instructor's spirit is breathed into every explanation he offers and every command he gives, and he may rest assured that he is understood by his men and obeyed exactly as he deserves to be, judging from the evidence given by himself as to his intentions.

Then the non-commissioned officers should have been carefully and well instructed in giving commands, and on the drill ground the officer observes them closely in this respect and holds them up to the proper methods. The last drills should contain movements given in double time, instruction in this respect being just as thorough as that given to movements executed in quick time; indeed, painstaking care is specially necessary to prevent double-timing being carelessly done. A great many enlisted men fail to use the left arm properly in executing double time with arms, holding the forearm pressed tightly against the left side.

It is believed that even the man's dress will affect in some degree his performance at drill; if allowed to wear his worst clothes he will be consistent therewith in his acts and bearing, and do poorly at drill.

The present method of changing direction in line is not well understood by enlisted men; great care and attention is needed in teaching them how to do it properly. The performance of the non-commissioned officers in the school of the soldier will show what may be expected of them in the other drills, which are all so dependent on the instruction previously imparted.

Other conditions being favorable, the best results will be ob-

tained when the privates are well fed, well clothed, receive strict and prompt justice according to the regulations for offenses committed, but at the same time are treated with kindness; when the non-commissioned officers have been properly instructed themselves, both theoretically and practically, and are held strictly to the common methods to be used by all of them, the officers present giving careful attention to every feature of the drill, especially to the manner in which the squad instructors acquit themselves.

The school of the soldier should be gone through in lessons, each being well taught and understood before passing to the next, thus giving the instructor time to study each lesson before having to teach it, and allowing the private, especially the poor recruit, time enough to digest and memorize the exercises taught him, before being called on to execute and understand other exercises.

The instructor should invariably prepare for the coming drill by studying the text.

SCHOOL OF THE COMPANY.

In order to ensure the proper execution of the manual of arms, bayonet exercises, and other exercises in the school of the soldier, these should also be taught the company as one body, and the instructor will be the better qualified to instruct if he can himself perform well all the exercises taught, with and without arms, for in no other way will he be enabled easily and promptly to detect errors and naturally and smoothly to explain how to correct them. Before going to the first drill the instructor should inform his officers and non-commissioned officers that the school of the company will be taught, lesson by lesson, beginning at the beginning, the lessons always to be announced beforehand and the lessons of previous drills always being available for the day's drill. In this manner all will be prepared for the next movement, which will be more surely the case if the theoretical instruction of the non-commissioned officers should take place during the season allotted for the drills. Each movement when executed for the first time during the season should first be carefully explained, and if not executed properly should be tried again immediately, the errors having been pointed out and fuller explanations given, if necessary. The instructor should give close attention to the guides, file closers and chiefs of platoons, and in

compelling them to do their duty properly, will insure prompt and watchful attention from every private. In this way only can there be a well drilled organization.

It will not be enough for the instructor merely to give correctly the commands prescribed for any selected movement, but he is to see that each command is understood and properly executed before giving the next command. The responsibility is his and cannot be laid upon the shoulders of any guide or chief of platoon who possibly may have misunderstood the command.

If each officer and enlisted man is required invariably to take promptly the position given him in the drill regulations, the instructor will be able to see whether his command and the movement are understood, and can hold the proper person responsible if he has himself performed his full duty. Otherwise each movement will necessarily be executed in an uncertain manner, showing lack of interest and perhaps ignorance.

Guides require very careful instruction and much watching, and file closers seldom seem to understand what is required of them. The responsibility for this belongs, finally, to the instructor. Let him explain fully, time and time again if necessary, all the duties of the guides in each emergency, and let him see that the file closers give him constantly the assistance required of them in keeping the privates in their proper places, whether in line or column. Let him hold all these individuals responsible for the performance of these duties, and the result is bound to be a well drilled and well disciplined company. It is the duty of every man on the drill ground to make each drill a success, so far as it may lie in his power to do so by loyally assisting his chief. It often happens that the "turn" is being poorly executed, or the company is dressing badly, when one word from a file closer who must see all this will be of great assistance to the instructor. Too often the file closer seems blind and dumb under such circumstances.

The drills should be varied so as not to become monotonous, but everything in the school of the company should be taught, and, after a while, movements should be executed a great deal in double time, special attention being necessary during this instruction, which is too often poorly given. After the subalterns have had sufficient instruction as chiefs of platoon they should be required to drill the company at first in the presence of the captain to insure a common method of instruction in the company.

Whatever commands the chiefs of platoons should give during

platoon movements, are to be given very promptly, so that the company commander may see that the movements are understood, and in order to insure prompt execution.

SCHOOL OF THE BATTALION.

The first requisite is that the battalion instructor should be mounted, as prescribed in the drill regulations. If on foot, he cannot give the proper amount of attention to the *manner* in which the different companies do their part, and therefore cannot hold the company commanders to the proper responsibility for the manner in which their companies execute what is required of them. Company commanders are to be held strictly accountable that the movements are properly executed by their companies, and in order to see whether or not such is the case the battalion instructor should be mounted, thus giving himself a better view of the field and enabling him to move about quickly, and without fatigue, which otherwise must in some degree hamper his movements and interfere with the drill. It is not so necessary that the adjutant should be mounted, but it would assist the drill, and being prescribed by the drill regulations he too should be on a horse.

The school of the battalion should be given in lessons, that part of the text devoted to the battalion in close order requiring at least five different lessons, and better,—six. These lessons should be announced to the battalion from time to time, each lesson including all previous ones. Every officer and guide should carefully study each lesson before going to the drill, and if any question or doubt arises with reference to anything which happens during the drill, the drill regulations should again be referred to, and in this manner all mistakes detected. The writer has heard General Upton say that he never went out to drill the battalion without studying his lesson.

The text should be carefully and thoroughly taught, the duties of officers and guides under the changing circumstances being fully explained at least once, and thereafter those in command held responsible for the movements of those in ranks.

When a company loses distance, whether in column or in a deployment, the attention of the responsible officer should be called to the fact. It too often happens that the same company will make the same mistake time and again during the drill, when, if promptly notified that the fault was his, the company commander would quickly correct his error.

These corrections can be made by the instructor without any harshness, and the company commander who has through his ignorance or neglect allowed his company to go wrong, should not feel hurt to have his attention called to the fact, but should endeavor to have as few mistakes as possible scored against his company or himself. Some of the mistakes most frequently made are,—loss of distance in deploying from column,—passing beyond the line before halting in deploying from column, and in other formations from column into line. There is very little excuse for the company which makes one of these mistakes a second time during the same drill, but it will happen often if the instructor fails to notice the first one. If the instructor will point out the error and its correction, kindly but firmly, such errors at drill will soon disappear. This was the custom of General Upton, who was a most kind-hearted man with the strictest ideas of discipline and drill. So much space has been given to the consideration of the responsibility of the company commanders at battalion drill because, from close observation, it is believed that the success of the drill depends more upon them than upon the instructor, unless they are held strictly accountable by him. The instructor may make small errors in his commands or explanations, but if the company commanders intelligently and loyally do their part, the drill will be a success notwithstanding. But if the company commanders, from ignorance or lack of interest, fail to carry out the spirit as well as the letter of the text, the drill must be a failure in every respect unless the instructor quickly understands the state of affairs, and by promptly noticing mistakes and correcting them applies a much needed remedy and restores the drill. The careful instruction given the guides and other non-commissioned officers will tell now in battalion drill. Non-commissioned officers differ greatly as to their efficiency at drill; they reflect the manner and style of instruction given in the company. Their mistakes, too, are to be noticed and corrected, and their company commanders should note in what particulars they fail to carry out the instructions given. The duties of the adjutant and sergeant-major are the easiest at drill, after they are once learned. But if they fail they should be corrected too, for in this way only can all be made to do their best.

As much variety as possible should be given the drill and towards the end of the season much double timing should be required. Explanations and corrections having been kindly and

impartially administered throughout the school of the battalion, the end of the drill in that school should find a well-drilled and well-disciplined body of men, the second condition following the first as a natural consequence.

We often hear of the latitude allowed the German company commander, and of the splendid results therefrom; with the argument based thereon that if a similar course were followed in our own army it would be to the advantage of discipline and drills. If the American company commander should be held to the same strict accountability as to the results which must follow from his instruction, good would undoubtedly follow both in discipline and drill. But so long as the American captain has not the German's strict account to render for his stewardship, it is believed that all drills should be regulated by higher authority than his, in order that common methods may be used by all companies and the same result obtained in this manner.

The writer has been persistent in requiring generous loyalty to the instructor from all at drill. This loyalty to a common purpose, as well as the delegation of authority and strict accountability which obtain in the German army, will account for their victories in this century. These results surely have been the consequence of much training on the drill ground with those objects in view.

That the Germans have in recent wars marched so straight to the sound of the cannon must in a great measure have resulted from a loyal assistance given by all in movements on the drill ground and in their fall manœuvres.

EVOLUTIONS OF THE REGIMENT.

In the history of our country there has never been a time when we needed, more than we do now, drills and practice manœuvres by larger bodies of men than a battalion, especially since our battalions will now as a rule be composed of only four companies. For years we have been behind the age in drills of large bodies of men, though of quite recent years affairs have been brightening under the influence of our summer and fall encampments, where something besides drilling battalions and smaller commands has been done. Under the old text book the battalion might have comprised all the companies of the regiment, and in battalion drill the whole regiment might have been united, though such a thing rarely happened because of our being so scattered

among the frontier posts. But drilling a whole regiment as one battalion would not present as many and as great advantages as are evidently offered by the new drill regulations in the evolutions of the regiment, in which the movements correspond to those presented in the old book in the "evolutions of the brigade."

Since joining my regiment fifteen years ago I have not seen or heard of brigade movements except those prescribed for a review. But now, with all such instruction made perfectly practicable by the new book, there is no good reason why it should not be given to any infantry command containing as many as six companies, whether of the same regiment or not.

Each regiment is now supposed to contain three battalions, and each battalion four companies, but most of the evolutions prescribed for a regiment of twelve companies could easily be executed by a command of two battalions of three companies each, and with almost as great benefit.

The advantages enjoyed by any regiment well drilled as such, over one never drilled as a regiment, are too evident to require description, but they will be apparent to all in sight the first time two such regiments are called upon to execute any manœuvre in our large encampments.

EXTENDED ORDER.

Squad.—Preliminary to the drill in this extremely important part of our exercises, the extra squad leaders should be carefully selected and should study and recite, together with all the company non-commissioned officers, in all that pertains to squad leading in close order and extended order. The company commander should hear the recitations and while doing so be careful to impress and fix in the minds of his class the most important points, and indeed all the points are important.

It would be best if the drill could begin after several recitations; this would greatly aid in having the exercises understood and properly executed. All company officers and non-commissioned officers of course are to be present on the drill ground. If the squad leaders fail to understand or execute properly the part assigned them the company commander should not hesitate to drill the squad himself or have his lieutenants and sergeants do so for a little while, in order to show the squad leaders how the drill should be done.

Every variety of exercise given in the text is to be often exe-

ecuted and in every cadence allowed, so that squads and squad leaders will not be taken by surprise when strange instructors command them in movements of larger bodies wherein they take part.

Section, Platoon, Company.—Sergeants are the proper instructors of sections and they cannot be given too much work of this kind to do, provided their work is well watched by the company commander and his lieutenants. From having superintended the movements of squads, they now fully understand what their squads are to do and how they are to do it. All possible variety allowed by the text is to be given to the drill, the cadence gradually becoming more rapid as in squad leading. If necessary, the commander and his lieutenants handle sections for a little while at a time to illustrate some particular point, and in doing so the benefit will be as much theirs as the sergeant's, for practice in these exercises will give officers confidence when drilling larger bodies of men.

The platoons are drilled by the lieutenants, if present; if not present, then by sergeants, after the company commander has carefully and fully put a platoon through all the movements given in the text, or at least the most important ones.

The company commander having been always present at the other drills and frequently an instructor at them, is now fully qualified to properly instruct his own command—a company, and in doing so, puts his company through all the platoon movements, exacting from all his subordinates the fullest support. All possible variety of movement and cadence is given the drill, quicker time being insisted on towards the end of the drills.

After all these preparatory lessons the company should execute all the battle exercises, each several times, and while doing so the general plan followed in the previous instruction is to be adhered to as strictly as possible, for in this way only can we discover wherein our text is faulty.

The majority of western posts possess unusual advantages in the way of surrounding country, roads, etc., suitable for every variety of battle exercise and outpost duty; and in order that officers and men may not be too badly taken by surprise by real service against an enemy, they should all be well instructed in all the exercises following the extended order movements of a company as given in the text book.

SOME SUGGESTIONS IN REGARD TO ARMS, ETC.

BY CAPTAIN CORNELIUS GARDENER, 19TH U. S. INFANTRY.

THOSE of us who serve with troops, especially during campaign or service in the field, have frequent opportunities to observe wherein improvements could be made in the arms, equipments, rations and clothing for the army, as now provided. In some cases the improvements that suggest themselves in these may be but slight and not of vital importance, but we also have opportunity from experience with them to notice their more serious defects and to wonder why these defects should be allowed to exist. Outside of the army at least, the American people generally are ever ready to improve upon anything that stands in need of improvement, and they pay but little deference to any spirit of conservatism, especially when it blocks the way of utilitarianism. Yet it is a fact that, owing to a condition of affairs that need not be explained here, those who have the best opportunities to judge of the needs of the army in matters that pertain to its welfare and efficiency, both in peace and war, have least to say in bringing about improvements upon any existing status. The art of war is never at a standstill, and the nation which is in the advance of others in all that appertains to making its armies effective in time of war, be it even in the smallest details, is most likely to win. We should therefore improve in army affairs wherever we see opportunity for improvement, and not allow any spirit of conservatism to stand in the way of throwing aside useless hindrances to efficiency, and of adopting from time to time the new ideas which suggest themselves in the way of improvement, especially where they are sensible and of manifest utility.

To officers of the line, the arms, equipments, rations and clothing of the soldier, are matters of vital importance. Upon these largely do we depend for success in campaign or battle, and like the poor, "they are always with us." Therefore it may be of interest to make a few suggestions with regard to them, which have occurred to the writer and possibly to others, and discuss wherein we believe improvements could be made in them as now

issued, especially from the standpoint of common sense and utility.

First, ARMS, *The rifle and carbine* :—All officers wish their men to keep these in the best possible condition, both as regards the usefulness of these weapons and their appearance. The Ordnance Department insists upon and has embodied it in the Regulations, that nothing shall be done to improve the appearance of the stock. As received from the armory, the stocks of all rifles and carbines are of plain walnut, unfinished, soft and rough. Is there any good reason why the wood of the stock should not be filled and have a hard finish so that it will not be so easily indented, but will present a better appearance, and be more in conformity with the accoutrements of a neat soldier?

As it is, about as soon as pieces are received from the armory, unless the captain is constantly on the alert to prevent it, men go to work in various ways by means of varnishes and shellacs to improve the appearance of the stocks and to make them more durable and impenetrable to water.

There is probably no small-arms manufactory in the United States which turns out its rifles or shotguns in the same crude and unfinished condition as regards the stock, as does the Springfield Armory.

In these arms, at present, the pull of the trigger is nine pounds or over. In the days of Frederick the Great, when Suabians and Walloons, ignorant and stupid peasants, were drafted in large numbers to serve as food for powder, there may have been some sense in having a nine-pound pull in order that the piece might not be discharged except by predetermined and strong effort. Our American soldiery however are senselessly handicapped by a nine-pound trigger pull.

No person wishing to purchase a rifle or shotgun for target or hunting purposes would ever think of getting one with such a pull. Three pounds is ample for all purposes of safety, especially in these days of brass cartridges and breech-loaders, and from the fact that a rifle is never loaded except to be immediately fired.

We all know how much practice it takes on the part of a recruit before he can keep his sight on the bull's-eye while pulling as hard as he can to fire the piece. This heavy pull handicaps even our best shots, our marksmen and sharpshooters; if not, why do good shots constantly endeavor to weaken the pull by filing the spring or by inserting pieces of leather, we all know

where, to produce this effect. Are these men all wrong and the rifle all right, or is a nine-pound pull unnecessary and senseless? Another unnecessary handicap to good shooting is the heavy hammer, which delivers a blow like that of a real hammer, just at the moment of firing, and about an inch to the right of the axis of the piece, thereby tending to rotate it in that direction and to disarrange the aim. Why must the hammer be such a heavy affair, or why must there be a hammer at all to explode the cartridge? That a cartridge may be exploded as well by a less terrific blow, there is no doubt. Shotguns and army pistols have a much lighter hammer and weaker spring and yet do their work well.

There is much room for improvement upon the present rear sight of our rifles. The indistinctness of the graduations is a constant source of annoyance in skirmish firing. It is impossible to set the sight when advancing at a run.

For known distance practice where time is not a consideration, they are all right enough, but does any one suppose that men under the excitement of battle, or out of wind from advancing by rushes or double time, can or will set these indistinct sights as ordered. The graduations are so hard to see on the range that, in order to make them more distinct, our best shots often fill them with chalk or whiting for skirmish firing. For actual service we should go back to the leaf sights as the Germans have done, or else have spring notches, plain and distinctly visible, so that all the captain's command need be, "first," "second," or "third notch" or leaf. As they are at present it takes a good light and perfect eyesight to set a sight as ordered, except by guess.

The battle sight should have few and very plain graduations about which there can be no mistake. An extra leaf with finer graduations for long-distance firing, with wind gauge, etc., could, if it is needed, be placed beneath the battle sight. Let us hope that the new rifle, the trajectory of which is to be very flat, will do away with raising and lowering sights within battle range.

The rifle should also have a *third band* about six inches below the present upper band, with swivel attached, so that it could be conveniently carried over the shoulder by means of the sling. As the sling is at present attached it cannot be carried at "swing rifle" with any comfort (see plate 19, page 43, Drill Regulations). There should also be a hollow space in the butt of the rifle and

carbine in which to carry cosmoline, a brush and thong, and a greased rag. Every soldier in the field should have these articles, and they cannot be conveniently carried in the knapsack or pocket.

As weight, especially in long marches, is quite an item in the many things that go to make up the efficiency of a soldier, everything that he has to carry on his person should be lightened in every way possible; and as some maintain that no weight can be dispensed with in the rifle, it seems at least that the bayonet and scabbard might be lightened. If the bayonet, which now weighs eleven ounces, were ten inches long and in the shape of a hunting knife, it would be useful for other purposes as well and would not weigh as much, and its scabbard could be of leather weighing but a few ounces, instead of three-fourths of a pound as the present iron one does; nor would such a bayonet and scabbard be always in the soldier's way whenever he wishes to sit down, as is the case with the present one. A bayonet ten inches long is just as deadly as one eighteen inches long.

In the matter of accoutrements it would seem that the heavy brass buckles now supplied for the field belt and the leather belt, could be replaced by buckles made of aluminium, a very much lighter metal. The meat can, tin cup and canteen, which the soldier has to carry on his person and which now weigh about two and three-fourth pounds, if made of aluminium would weigh less than a pound. For practical purposes and to make every possible diminution of weight in all that a soldier has to carry on his person, why should not all ornaments and all buttons on overcoats and other garments be of aluminium?

Under the head of equipments of a company I desire to call attention to company boxes, or rather to the fact that we have no such thing as company boxes, suitable for use when the company moves or for storage purposes in the barracks, furnished by the Quartermaster's Department. Those who were in Chicago during the opening ceremonies of the World's Fair will remember what a sight it was to see a company of regulars unload its baggage.

Necessary as such boxes are, there is no way in which they can be obtained except for a company commander to get on the good side of the post quartermaster and get him to make some sort of a box, or to buy the timber and iron for them in some way and have them made in the company by a company

carpenter. The result is that company boxes are alike in no two organizations and many companies have no boxes at all, and when commands move one sees the most heterogeneous lot of baggage, in general appearance not unlike such as one finds in the store-room of a junkshop. Why cannot the Quartermaster's Department make and supply each company with a suitable and properly made set of boxes, including bread and mess chests, nicely painted and labelled? These might be sent out to posts, filled with clothing or quartermaster's stores, thereby saving special freight on them.

Some of the Canadian militia are supplied with laced canvas trunks, four for each company. These trunks or valises are made of heavy duck (painted and about the size of an average company box), laced on top through eyelets with a heavy cord, and are used for carrying extra blankets or clothing.

I know all company commanders would be glad to have four or five such valises, to be used for similar purposes, or for packing tentage in when on the move, because they are very serviceable and weigh but little. As it is, we generally tie our tentage in bundles with ropes, in which it becomes easily damaged and soiled, and is sure to get mixed up with the property of other companies where there are different commands moving together; and our extra blankets are packed in boxes which weigh almost as much as the blankets do.

Rations.—In the matter of rations some few suggestions, more especially useful in times of war or in field service, are offered: Each of the component parts of the ration which is used in active service, should be put up in packages by the contractor, so as to be in multiples of 100 rations. For instance 100 rations of coffee is 10 pounds, a bag of coffee should weigh 50 or 100 lbs. net, which is coffee ration for 5 or 10 days for 100 men; 100 rations of sugar is 15 lbs., 100 rations of sugar for 5 days is 75 lbs., for 10 days, 150 lbs., and so on.

Bacon,	75 lbs.	net to the package,	100 rations.
Hard bread,	50 lbs.	" " "	50 "
Beans,	150 lbs.	" " "	1000 "
Beans,	75 lbs. (half sack)	" " "	500 "
Coffee,	100 lbs.	" " "	1000 "
Sugar,	150 lbs.	" " "	1000 "
Sugar,	75 lbs. (half sack)	" " "	500 "
Vinegar,	10 gallons keg	" " "	1000 "

Vinegar,	20	galls., half bbl.	"	"	"	2000	"
Vinegar,	40	galls. bbl.	"	"	"	4000	"
Soap & Salt,	40	lbs.	"	"	"	1000	"
Soap & Salt,	20	lbs.	"	"	"	500	"

A sack of bacon would thus always be 100 rations; a box of bread, 50 rations; a sack of beans or sugar, 1000 rations; a half sack of beans or sugar, 500 rations, and so forth.

The advantage of a uniform system in the weights of packages containing any of the component parts of the ration is obvious. This method of sacking and packing would be especially useful in time of war, when great quantities of these stores are to be shipped and handled.

It would do away with an immense amount of labor in weighing and reweighing every time stores change hands or are to be issued. By merely counting packages, the amounts on hand or being forwarded in cars or wagon trains, could be almost always accurately stated. At such times and when it becomes suddenly necessary to forward rations by wagon train, perhaps to be loaded during the night; or when a brigade or regiment is required to draw ten days' rations on a dark night preparatory to a move early in the morning; there is great advantage in knowing the weights of all packages. No weighing would be necessary except what can be done on a small scale for the odd pounds, nor need even a pencil be used to add weights as they are loaded. By counting packages a commissary can tell accurately at any time how many rations are in any particular wagon or train.

Twenty sacks of coffee would weigh 2000 lbs. and be 20,000 rations, about a load for a wagon. Fifteen sacks or 30 half sacks of sugar would be 15,000 rations and would weigh 2250 lbs. At present, hard bread is the only part of the ration so issued. This is issued in 50 lbs. boxes, or rations for 50 men for one day.

This rule of uniformity in weight should also be followed in sacking grain for animals. Sacks of corn should weigh 120 lbs. or 10 days' ration for a horse; sacks of oats 60 lbs., or 5 days' rations.

All proposals for army contracts for rations and forage should specify the number of pounds required to the package. The additional cost would be very small.

As shrinkage in weight is due almost altogether to the evaporation of water, no account need be taken of this in issuing the rations in unbroken packages of the kind indicated, just as at present no account of it is taken in issuing hard bread and soap. But

if this be an insuperable objection, then add to each sack, say 2 per cent., to make up for any shrinkage that might occur in weight between dates of purchase and issue.

In regard to the different kinds of food that go to make up the soldier's ration, there is probably but little improvement necessary. In these days of canned vegetables it would seem, however, as if tomatoes and green corn in cans should be a part of the ration. In the field there is not enough antiscorbutic in the ration as now prescribed. Potatoes and onions, being bulky and heavy and subject to being frozen, should be issued dessicated for field service. My experience with dessicated potatoes and onions, from having used them an entire winter in Colorado, is that they can hardly be told from fresh vegetables when well soaked and properly prepared. A half-hour's soaking in warm water, or over night in cold water, is all that is necessary.

There should also be issued to troops in the field or on the march, and especially when fresh beef cannot be obtained, beef extract as now manufactured in its semi-solid state. For a noon-day lunch or on a long fatiguing march, a tin cup full of beef tea either hot or cold would be infinitely better than the everlasting coffee, especially such as a soldier gets. Extract of beef is easy to carry and easy to use and is very palatable with a hard tack soaked in it. Extract of the coffee bean, containing all the elements except the woody fibre, can now be obtained in a liquid state and also in solid shape in cakes or tablets like chocolate, each cake being enough for one or more cups of coffee. By substituting these for the green coffee in the field ration, especially in times of war, a great saving of weight would be effected. There would be no coffee burnt by the cook and the coffee-mill could be left at home. Such articles of food may cost a little more than those which men now get on a campaign, but war is an expensive game at the best, and much sickness and camp dysentery could be prevented by providing more nourishing foods.

When armies are raised composed of men entirely unused to camp life and coarse foods, more men are killed in the first six months after they take the field by bacon than by bullets. It is expensive business to recruit men simply to lie in hospital awhile, and then be pensioned for the rest of their lives, in order to save money on the food supply.

Clothing :—In the matter of army clothing there has of late years been considerable improvement in some respects, but many

believe there is room for more. In the matter of color of the uniform, except for the recent associations connected therewith, no one will deny that gray is better than dark blue. It cannot be seen as far and does not show dust or dirt as easily. Cadets have always worn gray, even when the Southern troops did, if that be an objection. If gray is the best color, it should be adopted for our army. We might with equal propriety never eat corn-bread because the Johnnies lived principally upon that article of food during the war. Certainly blue is *not* the best color. We all know how plainly visible a marker is on the target range at any distance. One could not have a better target than a soldier dressed in a dark blue blouse. He is much more distinct than the black paper silhouettes at which we fire.

The overcoat of the enlisted men is made of excellent material, but it is not made so as to get the most warmth or protection out of the material in it. There is too much cloth around the body, if we include the cape, and not enough to protect the legs and thighs. It should be longer and have more material in the skirt. The cape should be very small and only protect the shoulders, or better yet, there should be no cape at all, but instead, a hood such as officers wear, for rain or cold weather. As now issued with a long cape, the knapsack cannot be worn unless the cape is detached, and then what shall be done with the cape but leave it at home? The overcoat should be longer and more like an ulster, just as ours is; and in order that the front skirt be not in a man's way when marching, or climb up on his knees in going against the wind, there should be a couple of buttons and button-holes to button them back with, leaving the legs free. There should be two breast pockets in the overcoat outside and one side pocket at least, so that on the march a soldier may have a chance to warm his hands there and also have a place to carry a few things, such as his pipe and tobacco or an extra box of cartridges. If outside pockets are unmilitary, as some say, why do officers have them in their overcoats? at all events it is not good sense to sacrifice recognized utility to an old-fogy notion. There is too much of that in the army, and besides, an overcoat is not a full dress affair.

We need no full-dress coat for a soldier. The padded dress coats they now wear are very warm, and yet they are principally worn in summer. They are uncomfortable in every way, and expensive, and as far as looks go do not come up to a well-made

blouse, nor does a company look as neat in dress coats as in blouses. There is no better garment to show off a good figure such as most of our men have, than a blouse. To take the place of the full dress for soldiers I would suggest the present blouse, just as it is, except with a standing collar, a few white facings for the privates and gold lace chevrons for the non-commissioned officers ; then when it has been worn awhile for best, these might be removed and the blouse worn for every day, without trimmings. The American people do not take kindly to much fuss and feathers any way, and the less of these we are made to wear the more respect they will have for us.

Gorgeous uniforms may be tolerated in Europe from the peculiar conditions which exist there, but to Americans, a man bedecked in gold lace and plumes is not an object of admiration, and any person so arrayed is apt to be jeered at by the small boys on the street, and the small boys often echo the sentiments of their parents. I believe that in this country where people hate ostentatious display in its officials, we should strive for utility and simplicity in army uniforms, and the sooner the better.

The presence of a regiment dressed as was the 22d Infantry when it was in camp on the lake front in Chicago during the riots, having been brought in from a campaign on the plains and dressed apparently for business only, had a better effect upon a mob than if the men had been dressed in finery with gold lace. In these things we copy too much after European armies. We should set the example for simplicity, utility and common sense in clothing our soldier, and we would save much unnecessary expense and be less subject to ridicule by non-military people. "We have heard it said by those of old" that fine uniforms are beneficial in some way towards making good soldiers and that the soldier will be more military if he wears one, but this too we believe to be old-fogyism.

Under the present *régime* the private soldier has plenty of head gear. A well equipped soldier has a dress helmet (Prussian), forage cap (French), a cork helmet (British), a musk-rat cap (Esquimaux), a slouch hat (cowboy), a brown cap which covers his entire face and neck except his eyes (Kuklux), and at the discretion of the post or company commander, a straw hat, to wear in summer when off duty.

Who prescribed all these different sorts of head-gear for the

army? and by what authority do some *made blouses* have outside pockets and others not, some six buttons and some five?

The fact is that whatever is sent out to a post now a days, by some quartermaster, is uniform for the soldier, and it is only by examining the annual price list issued by the Quartermaster's Department that we can tell what his military wardrobe should consist of. In order that an officer may be dressed as his men are, he should have all these things also, we presume, yet as there are no positive orders requiring company officers to wear when their men do,—leggins, hats, fur caps, fur gauntlets or overshoes,—we sometimes see commands turn out with officers wearing combinations of any of these articles, or entirely without them. The supply departments apparently know what we want, and so they send it to us, and consequently we are apt to appear at any time in strange and odd looking garments, being experimented upon like models in a military shop; and are accumulating thereby an ever increasing military wardrobe, wearing with patience anything sent to us, until the next change.

When we come to the subject of shoes for the army, we feel discouraged. My own personal experience goes back only as far as 1873, but at least ever since then, the Quartermaster's Department has faithfully tried to manufacture or contract for a good shoe. We have had many different kinds of shoes and boots since then, but none which were at all satisfactory, and yet, strange to say, during all these years, one could step into any store in a large city and purchase just such a shoe as a soldier would like to wear when he marches. The Quartermaster's Department seems to have an idea that an army shoe must be some odd shaped affair, different from anything that any one else wears, who walks or hunts, and in that respect alone have they so far succeeded in the matter of shoe production. There are many styles of excellent marching shoes manufactured in this country, shoes with soft uppers, broad toes and sole, and a low flat heel, laced far up to prevent dust getting to the foot, just such a kind as any pedestrian would purchase, but they cannot be bought for \$1.78. A good sewed shoe of the kind mentioned cannot be made for less than \$3, and as soon as the Quartermaster's Department becomes cognizant of this fact, it may succeed in providing the army with a suitable shoe.

The cowboy slouch hat of which I have made mention heretofore, is another instance of poor economy in buying inferior goods.

This hat would be the most comfortable and useful of the present headgear for field service if it were of good shape and quality, but ours is made of cheap wool instead of felt, and it becomes so shapeless after the first rainstorm that it gives thereafter even the most exemplary soldier the appearance of having been on an extended spree.

We in the line are so entirely in the hands of our friends of the supply department in all these matters of arms, equipments, rations and clothing, that any changes or improvements brought about in any matter suggested must come through them; but as we have the opportunities, from our experience with troops, of observing defects that might escape the attention of these departments, it is to be hoped that we will not be deemed presumptuous in pointing them out.

Comment and Criticism.

(The remarks under this head have, generally, been invited by the Publication Committee, which desires that, as far as practicable, these "Comments" should appear under authors' names.)

I.

"Army Organization."

By Lieut. W. E. Birkhimer, Adjutant 3d U. S. Artillery.

LIETUT. STUART has furnished a most interesting paper on the subject-matter of the prize essay, and has reasoned out his propositions to their logical conclusion. Moreover, the tone is that of caution and conservatism, adding weight to what is said. This much it is due the writer of the essay to state. Further than this we find little in which we can concur. Starting with premises which we believe, with every respect, are fatally erroneous, he has, by correct logic arrived at correspondingly erroneous conclusions.

It is not the fault of the essayist that he has not in any, the least, degree, aided in the solution of the problem formulated in the subject-matter given out for an essay. That, in the nature of things, were impossible of attainment by him or anybody else. No one can touch the subject except in glittering and practically useless generalities. "What army organization is best adapted to a republican form of government?" The question assumes that some particular organization is best for all such governments. It only remains to determine what it is. But is this not plainly delusive? In the first place it is necessary to determine what constitutes a government republican in form. Is the government of Mexico such? How as to Brazil? Have the little and ephemeral States of Central and South America such governments? They are generally so considered. We claim to have, and so does France, and the world will doubtless concede the claim to be just. But does it follow that the same kind of army organization is best adapted to these several alleged republics? By no means. That which is the salvation of one would prove suicidal to another. The army organization best suited to any particular country does not depend upon whether its form of government is republican or otherwise; but upon its location relatively to other nations, the power and warlike character of the latter, its commercial and other moneyed and business interests, and the spirit of its own people. The question as to what army organization is best adapted to a republican form of government is no more capable of a determinative answer than would be the question what kind of food is best adapted to its people. The conditions above mentioned will make a rule distinct for every State. The essayist, early recognizing this fact, makes short work of the general question, demonstrates the impossibility of satisfactorily answering it, and sets himself down without waste of time to the consideration of what army organization is best adapted, not to governments republican in form, but to one particular government of that character, namely, that of the United States.

At the threshold of the discussion we are met with the proposition that "we are

now at a turning point in the stage of affairs in respect to three most important considerations of army organization, conditions that go to the very foundation of its efficiency and success." The correctness of this premise is not conceded. We see nothing in our present condition which, properly considered, affects the question at issue and which has not existed from the beginning of the government. We do not mean to say that efforts, mostly unauthorized, have not been made to make it appear that important changes in our army system are necessary, but we maintain that in fact they are not.

Down to 1815 the army eked out an uncertain and painful existence. Not until the latter date had our civilian Presidents learned the important fact that the army, like the custom-house system, was not, and of right should not be, a spoil machine. They insisted upon it that, when a vacancy happened anywhere in the army, they had a right to select for the place from the whole body of their fellow-citizens, in the army and out of it. The Senate alone defeated the idea, and to that body alone is the fact due that the position of an officer of the army is one of stability. In 1821 the army was reduced and something like a military system enunciated by Secretary of War J. C. Calhoun. The attempt was a lame and imperfect affair—to have an army without paying for it—a fact which has rendered changes in important particulars necessary; nevertheless it in fact embodied the central military idea which has formed the germ of our military polity. This was the keeping in service a relatively large number of officers to enlisted men; thus rendering the former available, not only in their proper organizations, but as leaders and instructors of volunteers in time of war. In addition, there was the expectation that the small peace companies would be expanded to larger proportions when war broke out, thus materially increasing the fighting power of the nation. The first branch of this proposition has been realized to the fullest expectation; the surplus regular officers have nobly served the purpose indicated; but the idea that the regular organizations would expand by rush of citizens to their ranks for active war-service has been demonstrated to be a complete failure. Instead they have uniformly gone to the volunteers. This is a pregnant fact. We ought to try to learn something from experience. Certainly after a century of army life, the lessons of which all point in the same direction, we should be willing to settle down to that military system which the people of this country have shown that they want and intend to have.

Now, it is with deference maintained, that the military conditions of this country are essentially the same to-day that they have always been. We see no "turning point," no "critical stage," only plain sailing straight ahead, unless we ourselves choose to conjure up a phantom to frighten us from our course. The Indians have practically been either killed or subdued. As a result the troops formerly employed against them can now be concentrated with advantage, both from a disciplinary and economic standpoint, at large posts. There is nothing about this to change, but much to strengthen, and demonstrate more fully than heretofore the value of our military system. At large posts, if officers are kept with their commands, and the latter maintained reasonably full, we now have an opportunity to prove the excellence of that system, such as, so far as the line is concerned (the only part of army organization touched on by the essayist), we have never had before. Of course, if the officers are not with their commands, and the latter are permitted to become mere squads, the concentrating them will not be of great benefit to the service; but then it is also true that if this course be persisted in, no kind of organization which could be devised would produce anything other than a most indifferent military establishment. The particular kind of military organization best suited to this republican government is exactly the kind we have been having all along. It has been tried, is suited to the tastes of the people, and has done well. What we want to do is to make it as nearly perfect

as we can. Our efforts should be directed to that end. We want no experiment with the regular army at least. It is true that we recognize the difficulty of carrying the military system to a high degree of efficiency and keeping it there. If the army, no matter what the cause, arrives at that stage in its development when measuring beans, weighing nails, or acting as supervising clerks becomes the pathway to rank and emolument rather than serving with troops and wielding the sword in face of the enemy, it is difficult to reason regarding it, or to predicate what will be the effect of the wisest measures for its betterment.

But we fail to understand how the plan suggested by the essayist is to improve matters. It is there assumed that the different battalions are to be in a community where the supplemental and reserve classes can make use of armories, etc. How is this to be done at Fort Warren, Fort Hamilton, Fort Delaware, Fort Monroe, Fort McPherson, Key West, Tortugas, Fort Barrancas, Angel Island, Alcatraz Island, Fort Canby, Fort Snelling, Fort Sheridan, Fort Riley, and many other places?

Again, it is suggested that a few hours drill occasionally will give the supplemental soldiers sufficient military exercise and discipline. This is expected to produce the "maximum ratio of effect to cost." It is submitted that this expectation would certainly be disappointed. The disciplinary effect of the proposed plan upon the supplemental and reserve classes would not, it is believed, be worth considering. It would probably only result in producing what the essayist styles "tin soldiers," and of the worst type.

Nor are these the only features of the combination regular army and national guard (whatever that may mean) scheme proposed, which would, it is believed, fail in practice. So far as the supplemental and reserve features are concerned, the scheme proceeds upon the mistaken idea that no inconsiderable number of those who volunteer during war will prefer to join organizations officered by strangers perhaps, rather than by their friends and neighbors. Our unbroken experience proves that the contrary is true. So far as the regular army is concerned, the scheme, it is conceived, would simply disintegrate the regiments.

Again, the proposed combination scheme ignores the most potent influence in this country—the political. What are the politicians to do, if they are not to have a potent voice in appointing officers for the war army? Does any one suppose that they either can or will be ignored in such matters as selecting officers to command "the boys" when they go forth to meet the enemy? Heretofore politicians have largely commanded volunteers; we see nothing to indicate that our practices in this regard are likely to change.

To sum up, the proposed scheme of combining the regular army with a so-called "National Guard," would, it is believed, demoralize the former by loosening the bonds which hold it together; it would not produce soldiers during peace in the auxiliary classes, because of the inconvenience of carrying it into execution; it would not produce soldiers during war because the men whom it is proposed to attract to these classes would inevitably, as heretofore, prefer to go into volunteer regiments.

The important subject of the proper organization of the staff has received no attention in the essay. We therefore, while regretting this omission, have nothing to say on the subject. Our remarks, as is the case in the essay, extend no further than the organization of the Line. We believe that our true path to success herein lies in making the best possible use of, and carrying to the highest rational point of excellence our existing system. How this is to be attained it is not for us to say. That matter rests with our military superiors.

II.

"Military Training and its Value in War."

Colonel Thomas L. Livermore.

THE sweeping statements of this article with relation to the battles East and West in the War of the Rebellion require modification. The charge that "The numbers of killed and wounded have always been magnified by Northern writers" would seem to indicate either that the writer had not carefully studied "The Peninsula" by Webb, "The Army under Pope" by Ropes, "The Virginia Campaign of '64 and '65 by Humphreys, and "Regimental Losses" by Fox, or that he had not judged them without prejudice. The statement that "accurate statistics on this point [*i. e.*, the number of the killed and wounded] are unattainable" leaves out of account the War Department Records. These records afford very complete statistics from the highest authority—the official reports—down to the end of 1863, and the statistics disprove the assertion that the Union losses in almost every battle of the Army of the Potomac were vastly greater than those of the Confederates; and the inaccuracy of the statement is even greater as applied to the losses in killed and wounded, which losses alone have a bearing on the question of superiority in marksmanship which is the burden of the article. The reports of the Confederate commanders in the Army of Northern Virginia for 1864 and 1865 are but few, and those which have been preserved are not always specific as to the number of killed and wounded, but the details which are now and then given in these reports furnish evidence of the dreadful losses which the army was suffering during this period under Grant's continuous hammering, and which in 11 months wasted the strong army which defended Richmond and Petersburg down to the 25,000 men who surrendered at Appomattox. The writer under review says "If her losses had been even relatively as great, the South could not have maintained the struggle." We have not the means of comparing the total number of wounded in the Northern and Southern armies, because of the incompleteness of the Confederate returns, but a tabulation of the Confederate losses made from their muster rolls, excepting nearly all the Alabama rolls which were missing, showed that 74,524 were killed and died of wounds (Regimental Losses, p. 554). The total enrollment in the Confederate armies is placed by the best Confederate authorities at 600,000. (*Ibid.*, 552.) This gives 12.4 per cent. If 59,297, who died from disease is added, we have a total of 133,821, or 22.8 per cent. The total number of men called into service in the Union army and Navy was about 2,500,000, and 96,107 or 3.8 per cent were killed and died of wounds. Adding the 186,656 who died of disease gives a total of 280,763 or 11.9 per cent. (War Dep. Rep., 1865-6, pp. 43, 70-73.) There is no reason to suppose that the proportion of wounded to killed varied in the two armies. These figures show that the losses of the South were relatively greater than those of the North, but this is not a test of the marksmanship of the two armies, because there were large numbers of the Northern soldiers who served but short terms, and large numbers who were not exposed to fire, and to compare the execution of the musketry of the two armies we must resort to specific battles and campaigns where the numbers delivering and receiving fire can be compared. This leads us to the consideration of another passage from the article under review which touches upon specific battles and campaigns and which will be found to be no less erroneous than those above adverted to. The passage is as follows: "From the beginning the North began to win victories in the West. Donelson was a victory; Shiloh though a surprise was not yet a defeat; Stone's River, Chattanooga, the battles of the Vicksburg campaign, the battles of the Atlanta campaign, Franklin and Nashville, were triumphs in which was attested the

fact that in musketry training the Western soldier was fully a match for his Southern foe. Few really great defeats were suffered by the armies in the West. But how often were the armies in the East, superior as they usually were in numbers to the enemy, hurled back with terrible slaughter. What a list of fearful repulses! Read the list!—Bull Run, The Peninsular campaign, Manassas, 'The Wilderness, Spottsylvania, Cold Harbor, Petersburg,—catastrophe heaped on catastrophe!' This passage is an argument to support the position that, by reason of the unfamiliarity of the Eastern soldiers with the use of the rifle, they were usually defeated by the Confederates who were familiar with its use, and that by reason of the familiarity of the Western soldiers with its use they were usually victorious.

It is significant of the restricted scope of the writer's view, or of his inability to deal with facts that make against his theory, that he omits from his list Chickamauga,—the fiercest battle in the West, and one of the only three great battles there in which field works played no part and musketry decided the day,—and that in the East he omits to notice Antietam and Gettysburg, both great Union victories, in one of which occurred the bloodiest-day's fighting in the war, and in the other of which both sides lost more men than were lost on any other field. Both battles were fought to a great extent by solid lines of battle in open fields. In view of the omission by the writer to mention these battles we are the less surprised to read that in his view "the Army of the Potomac went on to a never failing, never ending series of bloody attacks, bloody defeats. It was a war of skirmishers. We fought in the woods." As we proceed to review the battles which he mentions, as well as those which he omits, we shall be led to wonder from what fountain of history an officer of our army could have drunk who could publish the utterances which have been quoted above.

A study of the history of the battles referred to, as it is written in the War Department Records, will make it clear that the results were not usually, if ever, due to superiority in firing on one side or the other. There are a good many conditions which can neutralize such superiority. Defensive works may quadruple the strength of the defending force. In the absence of works, ground or cover which requires or induces the attacking party to advance without firing, gives a like advantage to the defense. The cover of woods usually favors the party on the defense. An attack in flank sometimes renders it impossible for the party attacked to deliver fire of any effect whatever. The defeated party may be so much inferior in *morale* that it gives way under a fire less severe than its own. The general in command may lose heart and order a retreat when his men are quite capable of winning a victory; or he may subject his army to defeat by lack of skill, which leads him to hold too many men in reserve or to bring his divisions into action in detail; or an army may be defeated by massing against a single point in its line, or by a surprise, or by the capture of a large number of men where their firing plays no part.

The best test of superiority in firing is to be found in the number who are killed and wounded by a given number of the opposing force. The per cent. which a force loses is a test of its *morale*, but the proportion which the loss it inflicts on the other side bears to its own members, is much more nearly a test of the effectiveness of its fire.

We shall, in the course of the investigation which is to follow, find that not a few of the battles which the article in question classes as Union defeats, were in fact Union victories, and therefore they do not lend themselves to the theory of the article that the Confederates were superior in firing. We shall also find that in some actions which are fairly classed as Union defeats, the Union troops did the most execution with their fire. Our reasoning would be as fallacious as that which we are criticising, if we assumed that in the absence of the advantage of position the greater effectiveness of the Union fire was necessarily due to superiority in markmanship. Better arms and

ammunition, better and more abundant food, even better shelter and clothing, may have contributed to more effective firing.

Coming now to a review of the battles in question it is to be borne in mind that the numbers given are those which the War Department Records show to have engaged in firing, and do not include those who, although present in the army, did not open fire. The numbers lost are those gathered from the War Department Records, or those given in "Regimental Losses" by Fox, which were collected by that author from those records. References are to these records unless otherwise specified. The casualties from artillery fire cannot be separated from those inflicted by the infantry, but this probably does not alter the results arrived at.

BULL RUN, July 21, 1861. This battle was fought by militia and raw volunteers. Of the Union army a division and two regiments were absent from the field, leaving 30,605 "present for duty." McDowell says that of the troops present four brigades did not cross Bull Run and were not engaged, and that the total number engaged was 18,000 (Vol. II, pp. 304, 309, 324), but as those not engaged were in the presence of the enemy and menaced them, it will be assumed in the comparison of forces that all were engaged. The Union loss was 1492 killed and wounded and 1216 missing (p. 327).

The "effective force" of the Confederates was reported by Beauregard at 32,102 (p. 487), to which 10 per cent. ought probably to be added to compare the force with the Union "present for duty." The Confederate loss was 1969 killed and wounded and 13 missing. Thus in a Confederate victory a thousand of the Union side hit 64.3 men and a thousand of the Confederate side hit 37.7 men, if we assume that nothing should be added to their "effective force." The field was a fairly open one and neither side had the shelter of earthworks.

FORT DONELSON, Feb. 14-16, 1862. In this battle the conditions were not equal. The Union army attacked fortifications and the Confederates lost the most of their killed and wounded in a sortie. The Union army lost 2608 killed and wounded and 224 missing out of 27,000. The Confederates lost about 2000 killed and about 14,000 prisoners out of about 20,000. (War Records, Vol. VII, pp. 169, 270-275, 283, 291, 337. Grant's Memoirs, Vol. I, p. 315.) Thus in a Union victory a thousand Confederates hit 130 men and a thousand of the Union army hit 74 men.

SHILOH, April 6 and 7, 1862. In this battle the Confederates with 40,335 "effectives" attacked the Union army 37,593 strong numbering in what the Confederates termed "effectives" about 34,000 (Vol. X, Part I, pp. 112, 396), and drove it back a mile or more. On the second day the Union army, with a reinforcement of about 22,000 "effectives" (Vol. X, Part I, pp. 108, 324. Part II, p. 108, Van Horne, Vol. I, pp. 112-115), attacked in turn and put the Confederates to flight. The Union army lost 10,162 killed and wounded and 2885 missing. The Confederate army lost 9735 killed and wounded and 959 missing (Vol. X, Part I, pp. 108, 395). From these figures we arrive at the conclusion that in this Union victory a thousand of the Confederates hit 254.4 men, and a thousand on the Union side hit 173.8 men.

At WILLIAMSBURG, May 5, 1862, about 37,000 of the Army of the Potomac attacked about 23,000 Confederates who were partly covered by earthworks (Vol. XI, Part 3, pp. 184, 479 *et seq.* Part I, p. 566). The Confederates after sustaining a vigorous fight abandoned the field at night. The Union loss was 1866 killed and wounded and 373 missing (Part I, p. 450). Returns from six of the eleven Confederate brigades give their loss as 1118 killed and wounded and 133 missing (Part I, p. 569. Part 3, pp. 479 *et seq.*) In "Regimental Losses" the total loss is given as 1263 killed and wounded and 297 missing (p. 549). A thousand Confederates are thus shown to have hit 81 men, and a thousand Union men to have hit 34 men. The

cover of earthworks on the Confederate side certainly should have worked a disparity in the losses.

At FAIR OAKS, May 31-June 1, 1862, four Confederate divisions, three of which numbered 35,559 effectives (Vol. XI, Part 1, pp. 935-938. Part 3, p. 530), attacked the Third and Fourth Corps, partially by surprise. The Secnd Corps went to their aid. These three corps had about 55,000 present for duty, equal to about 50,000 effectives, and their loss was 4384 killed and wounded and 647 missing (Part 1, p. 762. Part 3, p. 238). Returns of two of the three Confederate divisions whose numbers are reported as above stated, give their total loss as 4851. The commander of the other division reports a loss of 1283 on the first day (Part 1, pp. 942, 991). Neither the strength nor the loss of Huger's division is given in the War Records. Fox, in his "Regimental Losses in the Civil War," gathered from the reports of the Confederate generals and their Surgeon-General, states that the loss of the Confederates was 5729 killed and wounded and 405 missing (Reg. Losses, pp. 542, 549).

If we reckon the strength of Huger's division at the average of the other divisions, we arrive at 47,412 as the strength of the Confederates. As the Confederates failed in their attempt to drive the Union army across the Chickahominy, and the Union army remained in possession of a large part of the field, this may be counted as a Union victory. Upon the figures above given a thousand Confederates hit 92.4 men and a thousand Union men hit 114.5 men.

In the remaining battles of the PENINSULAR CAMPAIGN the Confederates were always the attacking party and they were repulsed in every action except Gaines' Mills, on June 27, 1862. In that battle Porter's Corps and Slocum's Division, together numbering 29,781 equipped (Vol. XI, Part 2, pp. 224 225. Part 3, p. 238), were attacked by Jackson's Corps of three divisions and the divisions of D. H. Hill, Longstreet and A. P. Hill. The records show that four of these divisions numbered 32,948 July 20, and that they lost between June 25 and July 1 16,255 men (Vol. XI, Part 3, p. 645. Part 2, p. 973 *et seq.*). Assuming the other two divisions to have been of the average strength we arrive at the conclusion that the Confederates had upwards of 70,000 men present. The records do not enable us to arrive at the total Confederate loss, but reports from about half the force show 3556 killed and wounded (Part 2, pp. 973 *et seq.*). From this we perceive that a thousand Union men hit 119.5 men in this half of the Confederate force. The Union loss in killed and wounded was 4105 (Part 2, p. 41), or 58 to every thousand Confederates. Earthworks no doubt created a disparity, but the fact remains that the victory proved no superiority in marksmanship in the Confederates.

The SEVEN DAYS' BATTLES, June 26-July 1, 1862. The Army of the Potomac numbered 115,102 present for duty June 20, 1862, and its loss in these battles was 9796 killed and wounded and 6053 missing (Vol. XI, Part 3, p. 239. Part 2, p. 37). The records do not give the strength of the Confederates, but they show that, exclusive of Jackson's and Ewell's divisions, they had present for duty July 10, 57,166 (Part 3, p. 645), and that they lost, from June 25 to July 1, 20,614 men (Part 2, pp. 973 *et seq.*). Assuming that Jackson's and Ewell's divisions were of the average strength of the other divisions July 20, we should add for them 16,200 men, which would bring the total to 93,980 at the beginning of the Seven Days' Battles. They lost 19,739 killed and wounded (Part 2, pp. 973 *et seq.*). These figures lead to the conclusion that in the Seven Days' Battles a thousand Union men hit 171.5 men, while a thousand Confederates hit 104.3.

At MANASSAS, August 30, 1862, Pope had, according to his report, 58,500 men (Vol. XII, Part 2, p. 13). Colonel Allan,—Jackson's chief of ordnance,—states that Jackson's force numbered 54,268. (Southern Hist. Soc. Papers, Vol. VIII, p. 181). The

losses of both sides, as stated in the Records, include those at Chantilly and the Rappahannock. They were, on the Union side 10,199 killed and wounded and 4263 missing, and on the Confederate side 9108 killed and wounded and 89 missing (Vol. XII, Part 2, pp. 262, 562, 568, 810-814. Reg. losses p. 550). A thousand Confederates hit 187 men and a thousand Union men hit 155.7 men. The Union army did nearly all the attacking in the main battle, and gained ground. They were ordered off the field in the night. These facts afford no ground for the assertion that the result was due to superior marksmanship in the Confederates.

At HARPER'S FERRY, September 12-15, 1862, a Union force of 12,737 surrendered to a force of 30,000 Confederates after losing 217 killed and wounded (Vol. XIX, Part 1, pp. 549, 811, 843, 958. Part 2, p. 621). This afforded no test of marksmanship.

At ANTIETAM, on the 17th of September, 1862, there was the severest fighting of the war. The Union army was the attacking party in the battle and was victorious. The field was very open—neither side was protected by works. The Union army numbered 93,250 present for duty, but the 5th Corps (19,477 strong), five out of the six brigades of the 6th Corps (numbering about 9000 men) and the cavalry (4543 strong), hardly opened fire. The total loss of these 33,000 men was only 205. The total Union loss was 11,657 killed and wounded and 753 missing (Vol. XIX, Part 1, pp. 189, 200. Part 2, p. 336). The Records do not give the numbers of the Confederates, but they show that on the 22d of September, immediately after the battle, they had 41,520 infantry present, of whom 36,418 were present for duty. Their total loss (September 12-20) was 11,234 killed and wounded and 1367 missing (Part 1, pp. 810, 843, 861, 862, 925, 974, 1009, 1015. Regimental Losses, p. 550). Out of these McLaws' Division lost 461 killed and wounded and 442 missing at Crampton's Gap and Harper's Ferry (p. 861). Deducting these losses from the totals above given we have 10,773 killed and wounded and 925 missing in the battle of South Mountain (September 14) and Antietam; and as the Confederate losses in the two battles cannot be separated, the Union loss at South Mountain of 1728 killed and wounded and 85 missing (p. 187) is to be added to the loss at Antietam as above given for comparison. The Confederate loss of 11,698 above given, added to the number present for duty September 22, gives as the force in the battles 48,116, to which should be added 771 for the artillery (Part 2, p. 639). These figures show that a thousand Confederates hit 238.6 men, and that a thousand Union men hit 179.5 men, if we take into account only the 60,000 who actually opened fire. The disparity is not too great to attribute to the fact that the Union army was constantly the attacking party. As the victory was with the Union army the result does not tend to prove superiority in marksmanship in the Confederates.

FREDERICKSBURG, December 13, 1862. In this battle nearly one half the Union army expended its strength in the vain attempt to cross an open field to come to close quarters with the Confederates, who, secure in the sunken road, poured their fire upon the lines which all day long, one after the other, pressed forward until they were destroyed without the chance to make their fire felt. The right wing of the Union army in this unequal contest, out of about 51,000, lost 6168 of the total (10,208) killed and wounded, while the Confederates opposed to them, numbering about 27,000, lost only 882 (Vol. XXI, pp. 129, 142, 562, 1121). Franklin on the left, with the Left Grand Division and Birney's and Sickles' divisions, about 55,000 strong, attacked Jackson's Corps and Hood's Division, about 41,000 strong, in a position where they were not as well covered as the Confederates opposed to the Union right, and inflicted a loss of 3219 killed and wounded with a loss to themselves of 3147 (pp. 129, 142, 562, 1057, 1121). Thus while in the whole battle a thousand Confederates hit 150 men and a thousand Union men hit only 38.7, yet in that part of the field in

which the Union left fought, a thousand Union men hit 58.5 men and a thousand Confederates hit 76.7 men, a disparity none too great against the attacking party. These facts are conclusive against the theory that the Confederate victory was due to superior marksmanship on their part.

At STONE'S RIVER, Dec. 31, 1862-Jan. 2, 1863, the Union force of 39,940 lost 9,532 killed and wounded and 3,717 missing, and the Confederate force of 38,635 lost 10,239 killed and wounded and 10,271 missing (Vol. XX, Part I, pp. 196, 200, 215, 393, 406, 674, 675). A thousand Union men hit 256 men and a thousand Confederates hit 246.7 men. The Confederates abandoned the field. The disparity in the effect of the fire is accounted for by the fact that the Confederates were the attacking party.

At CHANCELLORSVILLE, May 1-3, 1863, the Union army, without the cavalry and the 6th Corps which were absent, numbered 88,477 equipped, and its loss was 7,931 killed and wounded and 4,214 missing.

The Confederate army,—without Early's Division, Barksdale's Brigade, the cavalry, and the Reserve artillery, which were absent,—numbered about 65,000, and it lost 9,209 killed and wounded (Vol. XXXIX, pp. 185, 797, 806-809, 820, 947. Vol. XL, p. 320. Reg. Losses, p. 550). A thousand Union men hit 104 men and a thousand Confederates hit 122 men. The Union army was ordered from the field by its commander when it was still able and willing to beat the enemy. It was the general who was defeated and not his army. The disparity in the number hit by the two sides was not sufficient to turn the tide.

At GETTYSBURG, July 1-3, 1863, the Union army numbered in "present for duty equipped" 104,257 (Vol. XLIII, p. 151), but only two out of the eight brigades of the 6th Corps opened fire at all (pp. 663, 681, 682), and in measuring the effect of the Union fire three-fourths of the strength of this corps—about 11,000—should be deducted, leaving a total of 93,257. The loss of the Union army was 17,684 killed and wounded and 5,365 missing (Vol. XLIII, p. 187). The Records do not contain a return of the Confederate army, July 1st, but a return at the end of May gives the number present for duty as 74,459 (Vol. XL, p. 846). The reports of the Confederate commanders show a total loss of 1,376 in minor engagements between that time and the battle of Gettysburg (Vol. XLIV, pp. 442, 684, 713-714), and a reinforcement of 3,800 in Jenkins' cavalry brigade (p. 708), and it is safe to assume that the Confederate army was augmented during the month of June by 2,424, the difference between this loss and reinforcement, making a total at Gettysburg of at least 76,883. The Confederate returns class only 84 per cent. of those present as "present for duty." The same rule would make the "present for duty," equipped of the Union army, July 1st, 98,607, and deducting 11,000 for that part of the 6th Corps which did not open fire, we should have a total force of 87,607 to contrast with the 76,883 Confederates. The Confederate returns state their loss at 15,301 killed and wounded and 5,150 missing, but the names of 12,227 captured are on record in the office of the Adjutant General of the U. S. Army, and the Medical Director's report states that 6,802 of them were wounded (Vol. XLIV, p. 346). General Lee said in his report that many of those returned as missing "were killed or wounded in the several assaults at Gettysburg and necessarily left in the hands of the enemy" (p. 325). Hill says the "larger part" of his "missing" "were killed or wounded" (p. 609), and Longstreet and Early make similar statements (pp. 365, 471). Only 770 wounded are reported as being left behind (pp. 365, 476). Deducting this number from the 6,802 wounded prisoners and we have 6,032, which number it is safe to add to the number returned as killed and wounded, together with 1,000 more (at the usual ratio of killed to wounded) for the killed reported as "missing." This brings the total Confederate killed and wounded to 22,333. A thousand Union men hit 239.4 men. A thousand Confederates hit 230 men.

The battles in the rear of Vicksburg were conspicuous examples of victories won by the masterly strategy which, throwing the Union army between the two Confederate armies, brought a superior force to bear on each in detail, and it would be futile to inquire whether the results were due to superior marksmanship.

At CHICKAMAUGA, Sept. 19 and 20, 1863, the Union force numbered about 61,000 "present for duty equipped," and its loss was about 11,413 killed and wounded and 4757 missing (Vol. L, pp. 169, 179). The Confederates reported their effective force at about 45,000. To this should be added about 3000 for Forest's Cavalry (Vol. LI, pp. 81, 146, 243, 290, 522). Their loss was 16,986 killed and wounded and 1468 missing, including the loss of only one of the cavalry brigades (that of the others not being reported) (Reg. Losses, p. 551). From these figures we find that a thousand Union men hit 278.4 men and a thousand Confederates hit 237.7, but this probably favors the Confederates because their numbers are those which were actually taken into battle, while the Union strength is that given in their return ten days earlier. The Confederates were the attacking party and the Union army abandoned the field.

At CHATTANOOGA, Nov. 23-25, 1863, the Confederate force was about 46,496 present for duty and it lost 2541 killed and wounded and 6142 captured (Vol. LV, pp. 36, 656, 684). The Union force present for duty was 66,650 and its loss was 5475 killed and wounded and 349 missing (pp. 12-14, 88). To compare the effects of the fire about 10,000 should be deducted for the troops of the Eleventh and Fourteenth Army Corps which did not open fire. On this basis one thousand Confederates hit 117.7 men and one thousand Union men hit 44.8 men. The Union army completely routed the Confederates, but the figures above given show that it was not superior marksmanship which enabled it to do this. It was superior *morale*, superior numbers, and superior leadership.

The battles of the Atlanta campaign in May, June and July, 1864, down to Peach Tree Creek, did not by their results mark superior marksmanship in the Union army, because they embraced no victory; nor did they mark superior marksmanship in the Confederates because they fought behind earthworks. After July 3d the fighting was mainly incident to sorties of the Confederates in which they maintained the attack almost continuously. We learn from Sherman's Memoirs that he took the field with 98,787 men, and from Johnston's Narrative that he had 64,456 men. The losses in killed and wounded are given in "Regimental Losses" (pp. 546, 551), at 27,245 Union and 22,410 Confederates. A thousand Union men hit 226.8 men and a thousand Confederates hit 448.5 men.

Neither did the battles of the Wilderness and Petersburg campaign afford a test of marksmanship, because the Union army almost always made the attack, and the Confederates, after the battle of the Wilderness, always fought behind earthworks. The Army of the Potomac entered the field with 98,000 infantry and artillery equipped (Vol. XXXVI, pp. 198, 915). The army of Northern Virginia had about 53,500 (Humphreys' "The Virginia Campaign," p. 17). Between the Rapidan and the James Grant received four reinforcements of 40,000 men, and Lee received about 12,000 ("The Virginia Campaign," pp. 124, 164. Badeau, Vol. 2, p. 328 *et seq.*). The loss in killed and wounded by the Union infantry and artillery between the Rapidan and the James was 43,740 (Reg. Losses, pp. 546-547. War Records, Vol. XXXVI, pp. 119 *et seq.*). A thousand Confederates in this two months hit 667.7 men. The Confederates' reports are so incomplete that it is impossible to determine their losses even approximately. The same is true of the battles in front of Petersburg.

III.

"Drill Regulations."^{*}

Lieut. H. P. McCain, 14th U. S. Infantry.

THE tactics of the present are purely theoretical. Our drill regulations, gotten up by a board of officers selected for the purpose, are now undergoing review by officers competent to judge of their merits, and only two points will be touched on.

I. In close order, six-inch intervals between files with three paces between guides or five between companies, have been substituted for the gentle touch of elbows for files and only one guide in line touching both companies. This certainly requires ample space for parade manœuvres.

One of the main ends of the art of war is "to make one's self stronger than the enemy at the time and place of actual combat."[†]

A column of fours closed to proper distance in the old tactics, occupied a depth in feet equal to the number of men in the column, and a simple calculation will show that, for a battalion of four companies, this depth, by the new drill regulations, has been increased by about one-fourth. On the march a battalion of four companies of, say 500 men, would by Upton cover 166 yards; the usual allowance for elongation on the march is two-thirds this amount, making a total depth of road covered, 276 yards. Under the new drill regulations this same column, under similar circumstances, will cover 345 yards. In other words, a deployment on the head of a column in route march can be done one-quarter quicker by Upton than by the drill regulations, and if the troops are put into double column of fours from the centre (a movement not in the drill regulations), Upton decreases this time by one-half.

In place of covering more ground in the close order, which is used only for purposes of concentration and at distances from the enemy beyond his effective range, the reverse would seem to be desirable.

It is a fact worthy of remark that, while recent periodicals have teemed with literature setting forth the advantages and importance of mounted infantry, an organization by the way for which no claimant has been found, the distance between the head and rear of an infantry column has materially increased. It is certainly desirable that the head of the column should reach a given point as soon as possible, but of what use will it be if the middle and rear are not within supporting distance?

Therefore reintroduce the touch of elbows and the thirty-two inches between ranks in closed column, and substitute for the fours squads of twelve (six men front) with the corporal as No. 3 front rank. Thirty-two inches gives ample room for the step and there is no difficulty in executing all movements while in gentle touch with your neighbor. The corporal is placed in the centre of the squad as giving more stability to the unit.

It will naturally be asked why, since concentration and rapid deployment are the ends, adopt six and not eight as the unit? Six is taken as being the largest unit that can be passed on the ordinary roads of this country. With few exceptions any road that will pass a four will also pass a six. The present four has a front of about nine feet; the six as proposed would have a front of eleven feet. In exceptionally narrow roads column of threes or files would be formed; on the other hand in exceptionally wide roads and on territory permitting, the march would be in double column of sixes from the centre with the file closers on the outer flanks. A deployment on the head of

^{*}Extract from essay read before Post Lyceum at Vancouver Barracks, Wash.

[†]Elements of Art of War, Mercur.

a column of threes could be made as quickly as on the head of the present four, even after making greater allowances for elongation than is allowed for the column of fours. However, the writer has no pride of opinion as to the size of the unit; any combination of unit and distances that will decrease the time of concentrating and deploying will be acceptable.

There is a sentiment in favor of the four which, without other reasons, will cause some to reject the six. In addition, the four is more symmetrical and in manoeuvres would generally present a more pleasing appearance. These are questions however that have no place in a system of drill regulations. History abounds with examples of disasters brought about by the middle and rear of a column being beyond supporting distance of the head. A most notable example is that of the battle of Sabine Cross Roads, where Banks, though outnumbering Taylor two to one, was defeated, and apparently for no other reason than because his troops were stretched out on one road and unable to reach the field. The collapse of the famous Red River Expedition was the result of this defeat.

With six as the unit, in a deployment from column to the front, six men approximately will be placed in position for every four by Upton, or three by the drill regulations. In advocating the squad of six with 32 inches between ranks in column, there is in mind the efforts of troops to join comrades who are already engaged at the front. Parade manoeuvres and marches with unlimited time can be made with full distance,--54 inches for sixes and 30 inches for threes.

It will be objected that a column of sixes marching at closed order cannot readily meet a flank attack. Admitting that such an attack would be made, which under the circumstances is highly improbable, the difficulty is more apparent than real. Using the commands in the drill regulations, it would only be necessary for the major to prefix the command "To the right (or left)" to the present command, so that the command would be: "1. To the right (or left). 2. Form for attack. 3. (Such) the base company. 4. March."

The reserves and supports halt at the fourth command; the firing line moves column right, and thereafter the movement would be as at present. If the column is on the line to be occupied, the major could direct the firing line to halt and the reserves and supports to move column left. On the other hand there is a positive advantage in the closed order for the attack from this formation, viz.: making most liberal allowances for elongation, there will still be about three men per yard of line of battle; and it varies from that to four men. This is an advantage possessed by no other unit. Four is too small and eight gives too many men per yard. The present column, after making the smallest allowance for elongation, gives less than two men per yard; and with the single rank, on which some writers insist, there would be a mere skirmish line.

It might not always be as convenient to march six abreast, but on the occasion of a forced march, on the rapid accomplishment of which depended the decision of a battle, convenience would not be a determining factor.

II. In the construction of any system of drill regulations, national characteristics undoubtedly constitute an important element to be considered. A system suited to the Germans or French is not necessarily, and generally would not be, suited to us. Our advance by fractions is similar to that discussed and approved by Von Scherff in his "New Tactics of Infantry," a book written for a large standing army disciplined and practised in all the forms of combat. The advance by fractions would be executed by them mechanically, or at least it would be so to a much greater extent with them than with us. Any war entered upon by the United States would be in consequence of a demand by the people, and would be carried on largely through pride and enthusiasm;

and it is doubtful if, under the circumstances, one-half of a company,—the organization above all others where comradeship is found,—would remain behind while the other half of its comrades were going to the front. The advance by fractions, in place of creating and warming enthusiasm, is calculated to have the contrary effect, and totally annihilates that moral impulse that will take an entire line forward. A disadvantage recognized by all, is the danger of certain subdivisions masking the fire of those behind.

The advantages claimed for the fractional advance are that the enemy's attention will be claimed by the subdivision that is firing, and under this diversion and the smoke the other subdivision runs forward with comparative security. That the enemy might, in fact will be, drilled to concentrate his fire on the subdivision running forward, is not mentioned. The smoke gives the range, and aim taken a little to the right or left will find those coming forward.

Each company has its objective assigned it, and of course will direct its fire and movements on that objective. The fire will be by volley during this period of the attack. If the offense is doing good work, each volley will be marked by the bullets striking the works and surrounding objects of the defense. Between the successive volleys, if any deliberation is used, one has ample time to aim and fire with deliberation. Under these circumstances the course to be pursued by the defense is apparent; under cover of their works, pieces are loaded and sights adjusted, and the instant of impact of the enemy's volley, rise, take deliberate aim and fire at any convenient fraction coming forward, or, if none are seen, fire as indicated above. With the knowledge that you will not be molested while aiming, this fire should be very effective.

A fractional advance, particularly for us, except such as is brought about by natural causes, is a dangerous experiment. Von Scherff, while favoring the advance by fractions, recognizes the fact that to make this advance successful such drills are needed as will make it practically mechanical.

IV.

“Musketry Training.”

Lieut. Geo. B. Davis, 5th U. S. Infantry.

To arrive at correct conclusions in regard to the proper method of rifle fire, it is necessary to consider the rifle and its capabilities, and the changed conditions under which it will be used.

The rifle of the present day has a flatter trajectory, it can be fired with greater rapidity, and its calibre is smaller than the rifle formerly used. These differences have increased the power of the rifle, so that the conditions that existed in former wars are too different from those that exist at present to admit of modes of action being learned entirely from the past.

The question that has agitated infantry officers since the introduction of the new rifle is, how are the greater capabilities of the rifle to be utilized? The answer to this question is found in the lessons taught by the failure of the French and Turks in their recent wars, and in the results of extensive experiments conducted in European countries. The conclusions arrived at are remarkable for their unanimity so far as general principles are concerned.

One conclusion that they have reached is, *that it is impossible to judge what can be done in the future by the results of past wars.* It will be seen in the course of this article with what justice this conclusion is drawn.

In past wars the infantry fight has been essentially at short range. In the Franco-

Prussian war, and the Turko-Russian war, the attacking party used short range fire only, because their weapons were sighted only for it. In the wars preceding those mentioned both sides used short range fire.

In rifle fire the all important thing is an accurate knowledge of the range.* In battle, generally, the distances have to be judged. Experience shows that men can be taught to estimate short distances with great accuracy, but as soon as an attempt is made to estimate the medium and longer ranges great errors are made. Hence it is that an independent fire, the kind of fire advocated in "Musketry Training," can be used only for short ranges, and in fact all the instances cited are for short range fire. The French and the Turks used a long range independent fire, which was somewhat effective in that it caused early deployment. It failed of full effect because the officers had no control, the men chose their own elevations and objectives and regulated their consumption of ammunition. The result, and it will be the same whenever an independent fire is used, was that the fire was scattering, the elevations incorrect and not changed as the enemy drew near, and at the decisive moment the troops were out of ammunition.† The method of to day is a controlled fire, and the controlled fire may be a volley or a mass fire. A controlled fire is absolutely necessary, inasmuch as a fire is effective only in proportion as it is concentrated both as to time and place.

It is only by a controlled fire that we can regulate the consumption of ammunition, be sure that the proper elevation is taken, and be sure that the fire is directed on the designated objective.

In every battle a time will come when a controlled fire is no longer possible. We of the infantry hope to delay this undesirable moment until the distance between the combatants is so short that the flatness of the trajectory will compensate for the errors in judging the distance, and the time before the consummation of our efforts will be so short that the amount of ammunition in the hands of the troops will be ample.

In the next war the infantry hope to profit by St. Privat, and that, with the aid of the artillery, a special body of troops will, by their fire, demoralize the enemy so that the troops designated for the attack can move forward.

To do this we shall have to use a controlled fire. We shall have to know the effect of the contour of the field upon the beaten zone; to know how and when to use combined sights and how to regulate the consumption of ammunition; to know the amount of ammunition required to accomplish a certain object, and the relative vulnerability of different formations.

Independent fire has had its day. Like many other things it must give way to changed conditions and improvements.

The French had a glimmering of the true method. They saw that it was useless to have a long range weapon if its powers were not taken advantage of. They did not see that the new order of things required a controlled fire nor did they see that the use of long range fire depended primarily on the amount of ammunition available. The Germans and the French have both learned the lessons this war taught.

Instead of relaxing their efforts, officers will have to make greater efforts. More knowledge, coolness, and tactical skill are required. A controlled fire simplifies the question of fire for the men, but, as has been seen, more is required of the officers.

For the moment leaving aside the considerations that have decided the great European powers to adopt a controlled fire, let us see if an independent fire could possibly be the best for us:

*The paper on "Infantry Fire" in the March number, 1892, of the JOURNAL, shows the necessity for this knowledge.

†The last conclusion does not apply to the Turks, for they seem to have had an inexhaustible supply of ammunition.

In case of war our army would be made up of volunteers. As the author of "Musketry Training" justly says, we should have a system that is applicable to them. Will time be given us to teach a volunteer to handle his musket, to estimate even short distances accurately, how to avoid a waste of ammunition, when to fire and when not to fire, and answers to other questions all important in musketry fire? The answers to all of these questions have to be taught to the men if an independent fire is to be used. When we fail to teach the men of the Regular Army by the present system, how much greater our failure will be when we attempt to teach volunteers.*

The principle on which our army is founded is that we have a large number of highly trained officers to be used in case of war.†

In the beginning of a war we ought to make, if possible, the trained officers offset the lack of trained troops, and this would probably have to be done by using the regular officers as instructors for volunteer officers.

The officers of infantry should know how to utilize infantry fire to its fullest extent, and in case of war it would not be difficult to teach the volunteer to aim at the enemy. When he came to battle the officers would have, at least, partial control of the fire, and this control would be kept up as long as possible,—the longer the better.

The knowledge of the officers would be utilized when a controlled fire was used. The voice or whistle of the officers would encourage the troops, and would tend to keep them calm. Would this be the case with independent fire?

In an independent fire each man is for himself; all depends upon his individual skill, and upon his knowledge of the refinements of target practice, and upon his coolness. In a controlled fire all men are striving for the same end in obedience to the mind at the head of the army. To achieve success under the present conditions, a commander should never lose control of his troops, but he will certainly have lost all control the instant independent fire is begun. Controlled fire is far simpler for the men than independent fire.‡ So that it would appear that controlled fire is the better for volunteers in that it substitutes the knowledge of the trained officer (when he is given command with volunteers) for the lack of knowledge of untrained troops; and all that is absolutely necessary for the troops to know is more quickly taught.

The firing of the French at Bois de la Garenne appears to have been their usual poor independent fire. Whereas the fire of the Germans approached what is now known as mass-firing—a controlled fire.

Captain Parker says that the volleys of the Hessians at Bennington went over the heads of the Americans. This shows immediately that the Hessians had not been properly instructed. If this high fire was produced by a lack of knowledge of the ranges and if the officers had known the modern method of extending the beaten zone,

*A case in point was cited to me recently. While practising the battle formations, the men became excited, the officers lost all control of the fire, and the men ceased firing when the ammunition was gone. I have seen the men become excited, point their rifles in the air and fire.

†In connection with the above subject, the following quotation from "The Rising Menace Against the Peace of American Society," by Colonel William S. Brackett, Inspector-General, Illinois National Guard, may be interesting:

"In response to this same inherited sentiment among us, the Regular Army of the United States is few in number. It is kept at the lowest possible limit consistent with the nation's welfare. But our Regular Army is, and has ever been, a school for the education of officers, whose superiors in the art of war, and as organizers and commanders of men and armies, do not exist in the world. As the volunteers of the late war derived their training, their customs of service, and many of their military traditions from the old Regular Army, so the present generation of State volunteers receive their first instruction, counsel, and encouragement, from those masters of this profession,—the highly educated and accomplished officers of the United States."

‡Von Boguslawski gives that as one reason why the length of service; as contemplated in the German Army bill, could be shortened.

the volleys might have been made effective. If, as is likely, the range were known with some degree of accuracy, owing to its shortness, the fire would have been more effective if the men had been taught to aim at the feet. Again, the Americans greatly outnumbered the Hessians, yet in spite of this fact and the poor volleys, they were not successful till the fire of the Hessians had begun to slacken for want of ammunition. This battle seems to illustrate very well the necessity of controlled fire.

The many defeats and losses of the Army of the Potomac cannot be ascribed with justice entirely to the superior fire of the Confederates. The Army of the Potomac usually had to attack the Confederates in a strong defensive position. Reverse the conditions and the Army of the Potomac was usually successful, as at Malvern Hill and Gettysburg. In the West the success of the Federal armies was in a great measure due to the fact that they were commanded by the most capable generals of the north, while the Confederates were not commanded by such leaders as the Army of Northern Virginia had.

Tel-el-Kebir was a surprise, and no lesson can be learned from that battle as to fire, but one great lesson can be learned, and it is, "controlled fire can do much, but it cannot make up for poor generalship, poor troops, and a violation of all the rules of security and information." *

In regard to these battles, viewed simply as a question of fire, it is only necessary to repeat that as the ranges were short, the errors in judging distances were small, and a marksman's skill was of avail. Furthermore the time it took to cross the fire-swept zone was so short that the supply of ammunition had not become an all-important question. How we are to keep up the supply of ammunition is all important to the infantry. If it takes upwards of 200 rounds to a man with the present rifle and controlled fire, how many rounds would it take if independent fire were used? The ammunition could not be supplied.

The English have in recent years been our great competitors in independent fire over known ranges. They have been forced to abandon that kind of fire. The reasons for this can be found in their experiences with the Boers and Soudanese. A study of the fire action of the English troops in those wars will be convincing as to the necessity and wisdom of the change.

The following quotation is from the great work on Fire Tactics by Major Mayne of the English army: "When our troops were shut up in Sherpur, on several occasions when independent fire began, it increased to such a pitch that neither bugle nor voice could be heard, and the men did not stop until they had fired the last round they had on them. The enemy did not mind this fire, but when volley firing had to be resorted to in the end, in order to maintain control over the men, the enemy were invariably seen seeking for a safer position." This is a good comparison of the relative efficacy of controlled and independent fire. General Skobelev in an order to his troops in the Geok-Tepe campaign directed the officers to use a controlled fire.

On page 76 the author of "Musketry Training" brings forward the plea that shooting in uniform weather renders competition possible. It is the same old cry. If we are training the troops with competition as the end, we do right not to ruin a good score by bad weather.

I would have the foot of the target the point of aim, because what we want men to do in action must be made second nature to them.† Of course when the distance

* I have to thank Captain Wagner, 6th Infantry, for valuable information about these battles, and also for his criticism.

† "Infantry Fire" in the March number, 1892, of the JOURNAL gives the reasons for selecting the feet as the point of aim.

is absolutely known the point aimed at is immaterial. Apparently the distances were assumed to be always known in "Musketry Training."

The infantry should not be expected to deliver an assault over open ground until the defenders have become demoralized by the fire of the artillery and infantry. In no future war should the awful mistake be made of sending them over an open field of fire against an unshaken enemy. Unfortunately the line of sharpshooters and marksmen using independent fire and not knowing the ranges accurately, cannot be expected to deliver a very effective fire, and as they are human beings, they will probably become demoralized when they find that their fire is not effective, and hence will be in no condition to fire effectively when the distances can be judged with some accuracy; however, other things being equal, the more skillful the troops are in handling their rifles the more efficacious will a controlled fire be. Therefore individual training is necessary but it should always be with an idea to control of fire.*

The strictest fire discipline must be maintained, and this will be easy to do in proportion as we have discipline. With perfect discipline it would be unnecessary to use the term "fire discipline." Looking at the article in its entirety, it is an interesting recital of what has been done in the past. It does not consider the conditions that exist to-day. Inasmuch as it is an argument for independent fire it assumes that the ranges are accurately known, or else fire would be used only over the short ranges. It omits all consideration of the supply of ammunition and above all it omits all consideration of the tactics of to-day.

V.

"Is the Three Battalion Organization the Best For Us?"

Lieut. J. C. Bush, 5th U. S. Artillery.

ANY officers will differ with Captain Edmunds in his deductions from the facts presented by General Sherman's letter to his brother and those drawn from the records of the late war.

It is doubtful that the system of recruitment which obtained during the confusion of a civil war fought over a political issue will be followed in a future war concerning the justness of which the people are fairly united.

But without entering upon a discussion of the war powers of Congress under the authority "to raise and support armies" or "to provide for organizing the militia," and in fact without really entering upon the discussion of the organization of a branch of the service not my own, I beg leave to quote from certain writings of Generals Sherman, Sheridan, McClellan and Upton as a complement to the excellent paper which Captain Edmunds has given us in another part of the JOURNAL. These statements, made some years after the war, when leisure for consideration and freedom from anxiety gave opportunity for correct judgment concerning the needs of an arm which each one of these generals had commanded in the field, should far outweigh the effect of what any one of them might have written previously under pressure of anxiety or stress of circumstance.

"In armies, infantry undoubtedly takes the lead, and to its action that of the other arms must be subordinated. It is the mainstay and backbone of all, whether it be reviewed in the light of numbers or its action upon the field of battle. Its fire is more deadly than that of artillery; its action is sure, while that of cavalry is fitful;

* Experience has taught that when the enemy draws near to the defenders of a position, the efficacy of the fire depends more upon the flatness of the trajectory than it does upon the skill of the men firing.

upon it the brunt of battle falls; it suffers more in action and more on the line of march, and on its tactics the whole superstructure of military operations must be built." (Home.)

The tactics in use since 1820 in the United States, whether of Scott, Hardee or Upton, have all been adapted from the German and French systems. The existing and convincing fact is that these and all other European powers have given up the single battalion organization of infantry regiments, all having abandoned it years ago as not adapted to a state of war, and therefore not fit to be maintained in time of peace.

"The infantry of the German Empire consists of * * * regiments of three battalions each.

"The influence of the Franco-Prussian war in producing modification in military organization is nowhere more perceptible than in the French infantry. Four companies were substituted for six in the composition of a battalion, and a regiment was ordered to be made of four battalions.*

"In Russia the regiments of the three divisions of the guard and the six divisions of the army of the Caucasus have four battalions of four companies each." (Upton.) This organization has since been extended to all regiments.

The Austrian infantry is organized into four battalion regiments.

"In Italy a battalion consists of four companies and a regiment of three battalions and a depot. The riflemen regiments are composed of four battalions each.

"How completely the army of Japan has been Europeanized may be inferred from the organization of the infantry. A regiment consists of three battalions of four companies each." (Upton.)

The infantry regiments of England are composed of eight companies, forming two battalions of four companies each. Even this organization, so much better than ours, is severely condemned by her own military critics, notably General Sir Lumley Graham, who insists that the Prussian three battalion formation is much better. General Upton condemns it in the following terms:

"The adherence of England to a military system inherited from the last century can only be explained by her insular position and the security from invasion afforded by a powerful navy. * * * Should England assail any of her formidable neighbors, we may safely anticipate that the war will be followed either by a speedy reorganization of her army, or by the total abandonment of the policy of armed intervention in foreign affairs." †

In General Sherman's *Memoirs*, published 1875, referring to the organization of the army during the war, he says:

"But the infantry composes the great mass of all armies and the true form of the regiment or unit has been the subject of infinite discussion, and, as I have stated, during the Civil War the regiment was a single battalion of ten companies. In olden times the regiment was composed of eight battalion companies and two flank companies. The first and tenth companies were armed with rifles and were styled and used as 'skirmishers,' but during the war they were never used exclusively for that special purpose, and in fact no distinction existed between them and the other eight companies.

* There is every reason to think that this fourth battalion is an economic measure and that tactically the three battalions are to be preferred.

† At the present time "militia battalions of territorial regiments" form the third and fourth battalions. Thus in a recent copy of the *United Service Gazette* we find: "Royal Lancaster, formerly 4th Kings Own Royal, 1st Batt. Aldershot, 2d Batt. Ahmednagar, 3d Batt. 1st Royal Lancashire Militia, 4th Batt. 1st Royal Lancashire Militia, Lancaster.

"The ten company organization is awkward in practice, and I am satisfied that the infantry regiment should have the same identical organization as exists for the cavalry and artillery, namely, twelve companies, so as to be susceptible of division into three battalions of four companies each. These companies should habitually be about one hundred men strong,* giving twelve hundred to a regiment, which in practice would settle down to about one thousand men. Three such regiments would compose a brigade, three brigades a division, and three divisions a corps. Then by allowing to an infantry corps a brigade of cavalry and six batteries of artillery, we would have an efficient *corps d'armée* of thirty thousand men, whose organization would be simple and most efficient, and whose strength should never be allowed to fall below twenty-five thousand men."

In 1869, when General Sherman was in command of the army, he made similar recommendations to the Secretary of War, who approved the same. In 1880, and again in 1882, attention was called to the matter. In 1883 the General says :

"On the 8th of February, 1884, I will attain the limit of age fixed by Congress for military service in the army, and I purposely asked of the President the privilege of anticipating this date to enable my successor to make such recommendations as he may deem necessary; but before leaving I beg to record an expression of opinion that it will be found wise to provide a common organization for all arms of the service, namely :

"That each regiment of infantry be composed of twelve companies, the same as now with the artillery and cavalry, making three battalions, each of four companies in time of peace. * * *

"The militia and volunteers of the States would soon follow suit, and we should have throughout the country these small handy battalions of four companies, instead of the large cumbersome regiments of ten companies—a bad tactical unit, and in practice always scattered."

In 1884, General Sheridan, being in command of the army, says :

"Were I called upon to make any change whatever, it would be simply to make a uniform organization for the three arms of the service by adding two companies and the corresponding majors to each regiment of infantry."

Again the Secretary of War concurs. In his report for 1885 he again says he would "increase the number of men in the companies and add two more companies and two more majors to each regiment of infantry;" and Secretary Endicott hopes it may be done and "that the three arms of the service be made uniform."

General McClellan in an article written in 1877 also argues for the three battalion organization of four companies for our army, saying : "But we would propose a radical change in the regimental organization, namely, to adopt that which is now in universal use among the great military powers of Europe.

"Experience has shown that a regiment of ten companies in a single battalion cannot be handled effectively."

He asks for a greater number of officers than that proposed by the Manderson Bill.

One suggestion he makes might possibly be carried out as it would cost no money. The General proposed that the regimental adjutant and quartermaster should have the rank of captain. This, if accomplished and the resulting promotions made according to seniority in each branch of service, would be of benefit to all arms, for it would take out of the rank of lieutenant nearly all of those who came into the service at the end of the war or shortly afterwards.

* The Manderson Bill asked for fifty men to a company.

That the mistaken system of recruitment adopted during the Civil War could not be remedied and that these proposed regiments could not be maintained at reasonable strength, seems not to have occurred to these writers, for they make no mention of it.

"In a quarter of a century we have progressed from the muzzle-loading smooth-bore musket to the breech-loading rifle. The muzzle-loader meant at most two, and usually one, shot a minute, with uncertainty of aim, execution at not exceeding 400 and no assurance of a death-dealing shot at over 200 yards. The breech loader means firing six times a minute, with accuracy of aim, carrying the deadly missile 2000 yards : *

"The increase of effective range is therefore five times ; which means that if it would take an advancing line four minutes to pass over the shorter space of 400 yards it would take it twenty minutes to pass over the greater distance of 2000 yards. Practically, however, it could not pass over the greater space at so rapid a gait, and it is safe to say that the power of the present arm for inflicting loss of life upon an advancing line is at least 10, and perhaps 20, to 1 in relation to the weapon used during the late war.

"In the same tactical formation of infantry probably fifteen men would be killed where one was killed with the former fire-arm. Add to this the powerful machine guns now in use and the rate of death to the closed files of double rank would be terribly increased. This it is that makes the present single-battalion, double-rank formation a suicidal one and that has caused its abandonment in other civilized nations. For a line to live under these changed conditions means that it shall be a single line, with intervals or spaces between the men who are to receive the attack or make the assault. The length of line of the present one thousand men of a regiment, in double rank, without intervals, is about 300 yards, and in single rank 600 yards. Every regimental commander of our late war will appreciate the difficulty of commanding even this length of line.

"Let the single line be lengthened by intervals between the files, as it must now be, and how powerless would any colonel be to control and command his regiment. He absolutely needs the three-battalion formation with a subordinate commander, a major, for each battalion. He cannot even personally command one and supervise the action of the others, for with the battalions properly placed according to modern tactics, each in rear of the other, the first with its skirmishers and supporting lines and holding a front of 200 yards and a depth of 400, the second and third battalions in column with spaces of about 250 yards intervening ; with a total depth (owing to the far penetrating power of the modern arm) of about 1000 yards, being about the depth of a division prepared for battle as it was formed in the three-line brigade organization during the war, the colonel commanding could not only not be heard but in most cases he could not see his command. The lieutenant-colonel, as his title implies, is needed as the lieutenant or general assistant of the colonel, and the majors commanding battalions become an absolute necessity for successful warfare.

"To sum up the tactical matter, the old line-of-battle formation used during our Civil War now belongs to the past as completely as the Macedonian phalanx, and the general who would use it would simply invite the murder of his army and sacrifice the cause of his country on the altar of imbecile conservatism."

An important incident flowing from the adoption of this organization is promotion.

* This was written in 1886 and if true then can, of course, be far more strongly put, now that magazine rifles and smokeless powder have come to play their part in the work of war.

For distances, etc., under present conditions, see Colonel Pratt's revision of "Home's Precis."

In other arms, except the artillery, it has been reasonably rapid. In the Staff, Engineers, and Ordnance Corps it has been quite so. Every second lieutenant of engineers of 1861-62 reached major's rank over sixteen years ago, and all graduates of '66 and all but two of '67 in that corps are majors to-day. There are officers who are lieutenants in the artillery arm of the service who fought in the late war 30 years ago. At a certain post that I know of there is an officer of the Medical Department who entered in '74 and who has held the rank of major for nearly two years; serving at the same post are lieutenants of the line who entered as officers the same year and who are not within five years of their captaincies. The medical officer gets his captaincy in any event at the end of the latter period.

There is no army in the civilized world that can supply such examples of discrimination in matters of promotion as our own.

It has been well said by a naval officer, writing on a subject akin to this: "The enforced continuance in subordinate stations cannot fail to tell upon even the best men. The tendency of such a system is to make routine men, to substitute apathy and indolence for zeal and energy. Officers who grow old in one grade and without promotion are but little encouraged to exercise their powers of volition. They come to regard themselves as part of a machine. Self-reliance, resolute action, readiness of resource, and the exercise of individual judgment are trampled out by this stagnation."

One quotation from a letter recently received may perhaps form a proper ending to this series of quotations:

"Everything calculated to improve any arm of the service is of direct interest to the others, for we must all work together in battle, and each arm needs the help of well-organized and efficient brother-arms."

Reprints and Translations.*

MILITARY CRITICISM AND MODERN TACTICS.

BY THE AUTHOR OF "THE CAMPAIGN OF FREDERICKSBURG."†

(From the United Service Magazine, England.)

MILITARY criticism takes a long time to recover its equilibrium. The practical effects of a new explosive, an improved fire-arm, or a novel formation, no matter what the circumstances, are sufficient to drive it to extremes. Such was the case when the Seven Days' Campaign of 1866 first drew general attention to the capabilities of the breech-loader. Colonel Maurice long ago made allusion to the fact that in June, 1870, it was stated, during a discussion at the Royal United Service Institution, that the strength of the defensive had been so much increased by the introduction of a quick-loading fire-arm that France needed no more than 100,000 infantry to defend her frontiers. Translated from the Institution papers, this unfortunate attempt at forecast appeared in a French review two days after Gravelotte !

This tendency to overestimate the value of the new development has been but lately exposed in a fashion sufficiently remarkable. In the Secession War, American soldiers revived an obsolete arm; and, under circumstances which were exceptionally favorable, used it with remarkable success. Fifteen years later, the Boers taught English soldiers that they had overlooked at least one of the lessons of the American campaigns; and in 1889, after the mounted infantry had done good service against enemies who had either very indifferent cavalry or were without cavalry, the Infantry Drill-book of 1889 laid down that it might "usefully be employed" in the scouting and patrolling of an advanced guard. Already had able critics—amongst them Colonel Valentine Baker—pronounced against the possibility of employing cavalry in battle except against cavalry alone; and now, when a substitute was found upon the outpost line, its occupation appeared to have gone indeed. And then, suddenly, the pendulum swung back. When, at last year's manœuvres on the Berkshire Downs, the battalion of mounted infantry was asked to manœuvre independently against a regiment of hussars, its commander declared that in an open country, without cavalry to reconnoitre for him, he was helpless; and the latest edition of the Drill-book replaces the above-mentioned paragraph with a sentence to the effect

* Please address communications concerning reprints, translations and reviews to Lieut. J. C. Bush, editor of this department.

† Major G. F. R. Henderson, Staff College, England.

that mounted infantry may be employed "under exceptional circumstances," to provide information, and to insure the security of an advanced guard; these exceptional circumstances existing, we may presume, only when cavalry is not available.

But although this would-be rival has found its level, and no more is now claimed for mounted infantry than, in Lord Wolseley's words, "to save the cavalry from having to dismount and adopt a line of fighting which is not theirs," the question of the employment of cavalry on the field of battle is still suffering from impatient criticism. Neither its officers nor those who help the arm to do its thinking are to blame. It is true that the cavalryman of to-day cherishes a well-founded hope that his share of glory will not be confined to screening or scouting, nor even to the overthrow of the opposing squadrons, side by side with the sister arms. The extreme depression induced, after 1870, by the slaughter of Woerth, of Mars-la-Tour, and of Sedan, has at length passed away, and buoyancy has been restored. But this desirable consummation has been reached by no hasty process. By none have the tactics and the tactical situations of 1870 been more patiently investigated and more thoroughly discussed than by writers on cavalry. At the same time, new developments have been fairly faced, the problems of the future, so far as is possible, carefully examined, and ample evidence collected to show that, in this instance also, criticism has overshot the mark. It is not the cavalry, then, who are to blame. It is not the writers who represent them that have shirked difficulties or discounted history. With them special pleading has found no favor, but with a certain school of infantry tacticians, of whose views the writer of an article in this journal is the latest exponent. "These military Nihilists, who swear that the action of cavalry on the battle-field is a thing of the past," have, naturally enough, based their deductions on the war of 1870. But in their anxiety to prove that infantry have nothing to fear from horsemen, they have looked upon the battles of that war as if they had been games of chess; they have underrated the effect of bad tactics and unsuitable ground; they have disregarded the indications of the moral influence of cavalry, even if ill-handled; and not only have they minimized the tactical successes actually achieved, but have used their utmost endeavors to demolish theories which the cavalry never dreamt of putting forward. Although the writer alluded to whittles down the effect of von Bredow's charge to next to nothing, and does not even mention the successful attack of the First Guard Dragoons in front of Mars-la-Tour, he betrays an uneasy consciousness that he has by no means proved his case. The very earnestness with which he strives to inspire his own arm with a contempt for cavalry shadows forth an apprehension, unacknowledged, perhaps, even to himself, that cavalry, boldly led and skilfully manoeuvred, is a real danger even to the staunchest infantry. In the last century, says the author of the "Cavalry Division," "infantry was never charged except when it could be surprised and taken in flank." It is within those limits, *i. e.*, the surprise or flank attack of exhausted infantry, that he, together with those who have faith in *l'arme blanche*, claims that cavalry can still exert a powerful influence on the fight; and, at the same time, he lays stress on the fact that the long fire-fights of the present are more destruct-

ive of the moral and physical energy of the infantry than the close-quarter conflicts of the past. His opponents, in producing a long array of arguments to prove that cavalry are useless against unbroken and forewarned infantry, are but tilting at windmills. That men on horses are no match for men on foot, with confidence in their weapons, in good heart, and expecting the attack, has been apparent since men were first drilled and disciplined. No cavalry soldier dreams—nor ever did dream—of supporting so wild a proposition. The most ambitious cavalry soldier asserts no more than this: that, although weapons have improved, human nature still remains the same, and that “surprise is still the deadliest of foes.” Nor need infantry officers fear that the recognition of these facts will be aught but beneficial to their own arm. It is well to teach the men in the ranks that armed with the rifle, holding their ground and keeping cool, they are a match for the most daring horsemen; but to inspire the infantry generally with a contempt for cavalry may improve its *morale*, but will most assuredly lead to a neglect of those precautions which alone can secure it from surprise. “The less cavalry are supposed to be able to act,” says Colonel Maurice, “the more numerous will be the chances presented to them.” We do not attempt to strengthen the *morale* of our infantry by telling them that the enemy’s fire is harmless. On the contrary, we point out its terrible effect, and inculcate the methods by which it may be avoided. Let all know when and where cavalry is to be feared, and they will be better prepared for the eventualities of battle than they were to go down to the fight full of a confidence which one day might be rudely shattered. Better trust to stout hearts, strong discipline, and incessant vigilance than to *morale* strengthened in dubious fashion.

Such false teaching as that set forth in the article alluded to has, moreover, the result of weakening the reliance of our own infantry on our own cavalry. As a most useful element of moral support this reliance should not be rudely tampered with. Nor does such teaching exercise other than a baneful effect upon combined tactics. Let both arms recognize that situations may arise where the enemy’s horsemen will be the chief danger to infantry and artillery, and the cavalry will be at pains to detect such situations, as well as to learn in what manner they can there render the most effective support. Let both arms recognize that tactical successes won by our own horsemen will not be decisive unless the infantry is at hand to follow them up; and the latter will learn how, when the cavalry has opened the way, it may best improve the opportunity.

The first duty of cavalry in action is to drive the hostile horsemen from the field; but, despite the arguments of its detractors it has a second duty—that is, active participation in the struggle of the infantry and artillery for the key of the position. The principal lessons of the Franco-German War as regards this last phase of action are these:—first, in order to attain or to prepare the way for enduring results, cavalry must be used in large masses; and, secondly, without skillful leading, good use of ground, and ready initiative, it is of little value. Given these essentials, and it will go far towards redeeming the reputation which it lost in 1870. But it is idle to expect cavalry, deprived as it is of the employment of fire, to achieve

great successes unless it is efficiently supported—that is, unless its strokes are delivered in close combination with those of the other arms. Infantry officers, therefore, will find useful employment in the study of combined tactics, especially as regards the methods by which their own arm may best profit by the address and valor of their mounted comrades. Nor would it be amiss were they to reflect on the means of preventing cavalry arresting a strong attack or counter-stroke. It may be true that the French cuirassiers were almost annihilated before Morsbronn, but they gained time for the infantry to withdraw unmolested to the Niederwald. It may be true that it was Bazaine, and not von Bredow, who stopped the advance of Canrobert's corps against the exhausted Prussian left at Mars-la-Tour; but it cannot be gainsaid that the death-ride of the six squadrons held back the attack for a precious breathing-space. It may be true that at the same battle the three squadrons of the Guard Dragoons lost 15 officers and 97 men in their onslaught on the French brigade that was bearing down upon the Prussian rear, but it is matter of fact that the enemy never again attempted an advance on this side, and that time was gained to bring up reinforcements to the threatened point. Such are the results that may be attained by cavalry, even when unsupported. Costly, indeed, they are—but well worth the sacrifice. And be it remembered that owing to the obstacles at Morsbronn, the absence of cover at Mars-la-Tour, and the unbroken ranks and unshaken bearing of the opposing infantry, the conditions in each one of these cases were as unfavorable as possible,

They must be difficult of conviction who in the face of such evidence deprecate the influence of cavalry when backed up by the other arms. Moreover, in the time to come, if the peace practice of Continental nations goes for anything, not six, but six times six squadrons will be sent on such errands as Bredow's at Mars-la-Tour, and not one line, but two or three, will break through skirmishers and batteries, and ride down upon the reserves in rear. Nor will this mass of horsemen be unsupported. Infantry and gunners will not stand gazing, open-mouthed and idle, at the wild conflict at the front, but will be pressed forward at their utmost speed, secure for a time from fire, to pour in through the breach thus opened by the horsemen.

Let us remember, also, that the moral influence of cavalry is as great as heretofore. In his report of the fight at St. Privât, Major-General von Kessler, who commanded the 2d Guard Brigade, hints that, when the attack came to a standstill, the distant appearance of a squadron or two of Chasseurs d'Afrique on the flank of the fighting line had a demoralizing effect on a portion of the troops. Von der Goltz has, also, a significant passage in "*Der Volk in Waffen*." "The cavalry will again play its rôle in deciding the day. This claim is, for the most part, justified by the recollection of certain situations in the late wars (1866 and 1870-71). * * * The lines of sharpshooters were seen to dissolve under the fire, to become thinner and thinner, and, in their endeavors to surround the enemy, to extend, disperse, and become ragged. Their energies had become exhausted in advancing through thick corn or underwood, in climbing hills, in a breathless charge, following immediately a long march, and the evolutions of

compact masses across the country. The ammunition had almost given out, many officers had fallen, command nearly ceased altogether. There arose in the hearts of many who saw all this the fearful question: how if the enemy's cavalry appeared on the flank, and careered over the battle-field? It would, without more ado, sweep away the wreck of the infantry! When, in the evening of Mars-la-Tour, the dusk descended, and scarcely anything could be discerned of the infantry on the wide battle-field, and the great mass of artillery in the centre, more than 100 guns, stood defenseless, a similar thought arose in our breast. It appeared impossible to check a resolute charge of cavalry that might have hurled itself upon those batteries."

The tactician who suggests the method by which Napoleon's grand principles of using the three arms in combination at the decisive moment may be applied to the conditions of a modern battle-field will do good service. To imitate exactly the methods of Austerlitz and Borodino, of Rosbach and Salamanca, may be impracticable; but, if the principles of tactics be immutable, they may still be applied, though after a difficult method, and those who have refused to slavishly accept the doctrine which, after 1870, relegated the cavalry to a secondary position have made the first step in the right direction. Look at it how we may, we must needs confess that in the European wars of the past half century the combination of the three arms has been far inferior to that which characterized the tactics of the great captains who have long since passed away.* Nor can we accept the excuse that development of fire has driven combination, even in a less degree, for ever from the field. It may be more difficult, but von Bredow, absolutely unsupported, and without aid from circumstance, showed us at Mars-la-Tour that the cavalry has not yet been deprived of all its vigor, and the general who first masters the art of bringing the action of each arm into close co-operation will initiate a new era in the art or war.

The Germans have long ago recognized that if, in 1870, the artillery and infantry worked in with each other in the manner that left little to be desired, the cavalry did not do its full share on the field of battle, and the present experiments in the employment of cavalry in masses as vast as those commanded by Seidlitz or Murat are but an attempt to give the foot soldiers and the gunners that effective assistance which decisive victory demands. It has been objected that so costly is our cavalry, and so few in number as compared with the mounted arm in Continental armies, that an engagement in which they were unsparingly used would leave a British army without sufficient force to carry out the essential duties of screening and reconnaissance. But opportunities for decisive action on the part of cavalry are not of such frequent occurrence as to give this objection weight. Either the ground is unfavorable, or they are retained on the flanks by the presence of opposing cavalry, or the resolute bearing and skilful conduct of the enemy's infantry, even though defeated, gives no opening. Take the seven battles of the Metz campaign. On two occasions only did the nature of the country offer scope to the mounted arm, at Mars-la-Tour and Gravelotte, and on the

*It is pertinent to the argument set forth in the succeeding pages to notice that, in 1882, both at Kassassin and Tel-el-Kebir, the English cavalry was most effectively employed.

latter date the exhaustion of the Prussian Guard before St. Privât gave the only fair opportunity for a successful charge. Take the Peninsula battles. Salamanca was the only field where Wellington's horsemen found room and opportunity to engage with success the opposing infantry. At Fuentes d'Onoro Marmont's cavalry had space to act against the battalions of the English right as they withdrew from their first position. But Montbrun, the commander, was no Kellermann to profit by the confusion of the moment, and yet this was the only chance offered to the leaders of the French cavalry during their long years of warfare with the Duke. Take the campaigns of Napoleon, a captain who never hesitated—save at Borodino only where, although the victory was incomplete, the Imperial Guard was held back in reserve—to engage his last man and his last horse. In few of his many battles were his cavalry asked to charge unbroken infantry full in front. Before Austerlitz, Marengo alone saw his horsemen employed unsupported to carry out the crowning act of conflict. Of his later actions, four only, Aspern, Wagram, Borodino, and Waterloo, called for supreme efforts and gigantic sacrifices. And at the two former the horsemen were employed to gain time, as were von Bredow's squadrons at Mars-la-Tour, or the French cuirassiers at Woerth; at Borodino and Waterloo they were ordered to attempt a task before which the infantry had quailed. To employ the cavalry either to gain time, or to act as a substitute for the infantry, may be characterized as the expedients of despair. They are expedients—destructive indeed, but they have been but seldom resorted to in the past, and the necessity for their adoption is not likely to arise more often in the future. Active participation in the battle does not entail the same reckless expenditure of life, but it requires something more than resolute courage; it requires the quick *coup d'œil* that enabled Murat and his colleagues to choose their own time and place for striking in, and, whilst doing their full share in the work of victory, to secure their squadrons from annihilation. That this will be more difficult and more costly in the future may be admitted. Cavalry can no longer be held in readiness within a few hundred yards of the enemy's line. But the opportunity will still come as it did at St. Privât. If we have but a small army, strength must compensate for lack of numbers; and the strength of an army is its power of combining its whole force in a single blow. One great victory is less costly than a series of indecisive battles, and to win a great victory, to become master of every opportunity, our generals must have in their cavalry an auxiliary that can act as skilfully and as resolutely in the centre of the field against opposing infantry as on the flanks of the battle against the opposing cavalry. To do either it must be able to act in mass; to do the latter it must be imbued with the self-devotion of von Bredow, and with that confidence in its own powers which critics of the school already spoken of are doing their best to undermine.

Moreover, in their anxiety to destroy the idea that cavalry is a foe to be feared, these critics have not only failed to extract the true meaning of the tactical facts of 1870, but, intent on a single object, have overlooked the latest developments of the mounted arm. Accompanied by mobile infantry, cavalry has acquired an independence to which it has as yet been a stranger in European wars. Its offensive strength has expanded, and, at

the same time, it has been supplied with the defensive capacity it has hitherto lacked. The author of "The Cavalry Division" has pointed out that the turning movement of the 3d French Corps at Gravelotte was held in check, first, by the charge of the Guard Dragoons, and, secondly, by the presence of the 5th Cavalry Division on the extreme flank ; and it has been said that at Gravelotte had du Barail's division, posted throughout the day behind St. Privat, been employed in the same manner, the decisive turning movement of the Saxons might at least have been delayed long enough for the French Imperial Guard to have come up into line. With cavalry and horse artillery alone, it is suggested, the deployment of the Saxons might have been made at least a tedious process, and perhaps protracted until nightfall. Had a force of mobile infantry lent its aid, the difficulty and delay would certainly have been greatly increased. Here is a new field for consideration. How is the mass of infantry and artillery, employed in a wide turning movement, to secure a rapid deployment and perhaps a change of front in the face of a force composed as above?

If the real value of the mounted arm be once recognized, infantry critics will find in problems of the like nature a new field, and the proper combination of the three arms, a question that has been somewhat lost sight of in the storm of arguments for and against the use of cavalry in the shock of battle, will once more assume the prominence it deserves.

But it is not the cavalry alone that has to complain. The infantry has also been made the sport of theory. So startling were the phenomena which followed the introduction of the breech-loader into battle, so radical the changes it involved, that the earliest exponents of the new art of fighting appear to have believed that the first principles of tactics were already obsolete. They set themselves to create a system *ab ovo*, and in their anxiety to develop the power of the improved fire-arm ignored altogether the teaching of the past. The extraordinary elasticity of the company column impressed those who had seen it employed in 1866 and 1870, to such a degree that the dangers it brought with it were overlooked. Even Marshal von Moltke, in his "Influence of Fire-arms upon Tactics," committed himself to most curious logic in order to prove the efficacy of the new formation. Taking the Alma as an instance, he first of all demonstrated the inferiority of the line to the column ; and then, after describing the disadvantages of the latter, without a single word of explanation, quietly summed up to the effect that the company column was superior to the line ! Recent wars have indeed given us no reason to doubt the justice of his conclusions. The company column, indeed, in one form or another, has been everywhere adopted as the best means of maintaining the strength and energy of the fighting line. But our contention is this : that it was too hastily accepted, that its disadvantages were never pointed out, that no endeavor was made to secure to the new formation the sound principles of that which it superseded. If there is one principle more than another which is important in war, it is that in unity there is strength. For this maxim the Germans substituted one of the contrary tendency. They broke up the attacking line into a number of small bodies, acting independently, although with common impulse. There was no attempt to combine elasticity and cohesion.

Instead of "slowly broadening down, from precedent to precedent," infantry tactics underwent a violent revolution. The old order was utterly discarded. It was asserted the old doctrines had had their day, that the experience of centuries was a dead letter, and the company column the spell that would compel success. The battles of 1870 served rather to confirm than to dispel the illusion. The new formations were never tested by a strong and well-sustained counterstroke, although the result of offensive returns on a small scale indicated what the result would probably have been. And they were never tested for this reason; the tactics of the French army had been framed in accordance with theories even more one-sided.

An unprejudiced examination of the methods of the Franco-German War reveals the fact that the infantry on both sides suffered from theories that were, to say the least, injudiciously formulated. It may be that these theories were carried far beyond what the authors intended. It may be that the advocates of wholesale reforms had no thought of putting on one side fundamental principles; that, whilst founding their demonstrations "on the nature of the arm," they still held in mind that victory now, as heretofore, depends on moral influences, the most telling of which is the strength imparted by unity; but it is none the less true that the very vehemence of their arguments in favor of the new order obliterated in the minds of those who followed them the very recollection of those immutable rules of warfare which had hitherto been their guide. There is little doubt that the remarkable work of Captain May, "The Tactical Retrospect of 1866"—discredited as it was by the supreme authorities—had an extraordinary effect on the leading of companies and battalions in 1870. And whilst the startling doctrines there set forth as to the absolute independence of the subordinate leaders had much to do with the dispersion of units and the difficulties of command in the battles of August and September, 1870, the well-known pamphlet of Prince Frederick Charles, "On the Art of Fighting the French," was directly accountable for even greater evils—for the reckless impetuosity of the German officers of every rank. Such was the general impatience to anticipate the enemy, to seize the initiative, and to force on him the defensive, that it almost seems as if the "furia Francese" was a veritable nightmare.

In both theories there was, nevertheless, a large germ of truth. The company column certainly does give elasticity to the attack; and it is absolutely necessary under rifle fire, breech-loading or otherwise, that the subordinate leaders should be given a free hand at the moment when the zone of effective fire is reached, for from that moment higher control is, generally speaking, absolutely impracticable. But it was not necessary that the line of battle should be broken up into company columns at the moment of deploying, often far beyond the zone of effective fire; it was unwise to make the company column the tactical unit, for such was the practical result of deploying battalions, brigades, and even divisions in line of company columns, without leaving any reserve whatever in the hands of the commanders; and the feeling that the subordinate leaders had so free an hand as to be almost encouraged to lose touch of their own battalions, and to embark on independent enterprises, was exceedingly prejudicial to decisive success.

Even von Moltke himself complains that the maxim "aus der tiefe fechten" was generally neglected, and that the entry into battle usually degenerated into an impatient rush. The Red Prince, too, was in the right when he urged before his comrades-in-arms the importance of the initiative, the power of the offensive, and the necessity of anticipating the French onset. But it may be doubted whether he commanded in his heart the blundering into battle which was seen at Woerth, at Spicheren, at Colombey, and at Gravelotte. Had not the French leaders been so influenced by Marshal Niel's theory, again true in itself, that the proper tactics for an army carrying the breech-loader was to remain on the defensive until the enemy had shattered himself against an invulnerable front, they would have remembered that to take immediate advantage of the enemy's mistakes is the true practice of war; they would have remembered that the flank is generally the weakest point, and the disciples of the royal soldier would have paid deeply for their temerity. It has been said by a great tactical authority that, so far as his reading goes, such a thing as a normal battle, that is the battle of the text-books, where due preparations and fitting dispositions precede the assault or the defense, very seldom occurs. Now, this is a dictum which it is impossible to deny. In war, more than in aught else, "the best-laid schemes gang aft agley." But it by no means follows, because it is impossible to attain the ideal, that the ideal, and the principles on which it is based, should not always be held in mind. The Franco-German War was certainly remarkable, it may almost be said singular, for the absence of normal battles. There are few, if any, actions in which a deliberate plan, either of attack or defense, had been conceived before the troops came into collision. The state of chaos which the advanced school of theorists, already spoken of, had wrought in German tactics, was, perhaps, the chief cause that made the Metz campaign so unlike those of Wellington and Napoleon. But the extraordinary shortcomings of their enemy had much to do with the eccentric leading of the victors. Never was seen, in any disciplined army, such absolute neglect of precaution, so inactive a cavalry, so complete a disregard of the value of time. Except at Gravelotte—and even there the troops at St. Privat were still waiting for their entrenching tools—the French were always unprepared. Even at Woerth, although MacMahon had already fortified and manned the position, de Failly was not yet up. It was the abnormal unreadiness of their enemy that, in part, induced the Germans to depart from ordinary procedure.

Three times in fourteen days, at Vionville, on the left at Gravelotte, and at Beaumont, the German advanced guards found themselves within range of the French camps, the tents still standing, the men engaged in cooking, and the whole force without the slightest suspicion that the enemy was in the immediate neighborhood. Such opportunities gave no time for precise arrangements, for concentrating the troops before attack, or marshalling them in battle array. Moreover, at Vionville strategical necessities dictated immediate action. At Beaumont the tactical situation was equally imperious. But at Spicheren and Colombey it was the vaulting ambition of the too eager daring of the subordinate generals which initiated the risk and confusion which characterized these two battles.

At Woerth, the dislocation of the Crown Prince's plans was due rather to the fact that from his position far in rear at Sulz he was unable to control the ill-concerted enterprises of his advanced guards. At Gravelotte, again, the battle of the right wing was begun, contrary to the instructions of von Moltke, by the commander of the 33d regiment, who, on his own volition, attacked the advanced post of the French in the Bois de Genivaux.

In the war of 1866, also, impromptu engagements were more frequent than deliberate encounters; but the Austrians suffered from the same shortcomings as did the French in 1870; lack of reconnaissance and incapable leaders. Surprises were the rule rather than the exception; and, moreover, the Prussians, striving to gain room for deployment in the open ground beyond the mountains, were compelled to attack the hostile posts, which maintained so slack a watch over the defiles, without hesitation or delay.

Such were the circumstances which hindered the battles of these two campaigns being conducted in normal fashion; and although it is idle to argue that such circumstances will not recur, that the enemy will never lay himself open to surprise, or the advanced guard leaders always act with circumspection, it must be acknowledged that, with these shortcomings rectified, pitched battles, that is, engagements where both sides have sufficient time to make preliminary dispositions, will again become the rule; and German tacticians are careful to inculcate the importance of a deliberate entry into action.

Because the breech-loader was the most effective factor in both these wars, a belief appears to have arisen that its introduction has rendered impracticable the deliberate and carefully-prepared attacks of large masses of men. It is true that long-range fire has diminished the control of the superior leaders. It is no longer possible for the commander to bring his troops to within so short a distance of the enemy that, when launched on the objective, his subordinates have no space wherein to wander from the true direction; but if due precautions be taken to reconnoitre far to the front, and the value of preparation and of unity be thoroughly realized, it will seldom happen that time will be lacking to devise a plan of battle or to make fitting arrangements for its prosecution. Take the campaigns of the greatest soldiers of the eighteenth and nineteenth centuries, the soldiers who were tacticians as well as strategists—Marlborough, Frederick, Napoleon, Wellington and Lee. In how many instances were they compelled to fight unprepared? Not one of them, save on very rare occasions, was taken at such a disadvantage as to be prevented from marshalling his troops in such order as best befitted the circumstances, and of meeting the enemy, either when attacking or on the defensive, with his whole strength. Frederick, indeed, was surprised at Hohenkirch. At Busaco, had Massena obeyed Napoleon's rule and been present with his advanced guard, Wellington, in all probability, would have been defeated. For some reason which Napier makes no attempt to explain, "the position was only half occupied, and the allies were moving with the disorder consequent on the taking unknown ground, when forty thousand French infantry and a large number of batteries crowned the opposite ridge." Lee, too, cautious almost to a fault on the

defensive, neglected to entrench his left at Mine Run, when confronted by the Army of the Potomac in October, 1863, and two Federal corps, equal nearly in number to his whole force, had already been massed opposite this point when the impending assault was countermanded. But these are the only instances. The necessity for immediate attack without waiting for supports, a proceeding which destroys all symmetry of action, which sends units into the struggle on an abnormal front, renders impossible the retention and decisive employment of the reserve, and reduces superior leading to a minimum, will probably occur as in the past. But, whilst we may rate at its true value, under such circumstances, that spirit of energetic initiative, which the Germans are so sedulous to foster, the dangers of the abnormal, that is, the accidental battle, should also be given their due weight. If the confusion and the but partially decisive results consequent on that confusion which the battles of 1866 and 1870 display are to be avoided, the General-in-chief must be allowed time to frame and to communicate his plans, to point out the various objectives, and to dispose his troops in accordance with the scheme of attack or of defense that he has conceived. Thus only will the purpose of battle be fulfilled; the annihilation or demoralizing defeat of the enemy's army. Regarding the question from the broader point of view, it is interesting to note the methods of the two greatest English-speaking generals of the century, Wellington and Lee. Both having indicated to their subordinates the space they were to occupy in the line of battle and the tactical objectives they were asked to seize, frankly surrendered into their hands the further conduct of the fight. Wellington on the defensive, taught, perhaps, by the danger of the rash counterstroke of the Guards and Germans at Talavera, sternly forbade all local offensive action beyond the limits of the position. Lee, probably from the more extensive front of battle which he had to superintend, was content to leave the decision of limit to the judgment of his lieutenants. "During the battle," wrote Lee, "my direction is of more harm than use; I must then rely on my division and brigade commanders. I think and I act with all my might to bring up my troops to the right place at the right moment; after that I have done my duty." Moreover, both these commanders appear to have instilled into these same lieutenants a wholesome apprehension of bringing on accidental battles.* Nor did they find it impossible to make their orders explicit without at the same time hampering their subordinates. This faculty seems to have been somewhat lacking in 1870. At Spicheren, on August 6, even the commander of the First Army, General von Steinmetz, had no knowledge of the ultimate intention of the Commander-in-chief, which was to delay the crossing of the Saar until the 9th. For two days frequent reports had come in from the cavalry that the enemy was preparing to retreat. The unaccountable evacuation of the Saarbrucken ridge, covering the bridges over the frontier stream, heightened the impression; and the commander of the 14th Division, having occupied the abandoned position, took upon himself the responsibility of attacking the hostile troops that faced him on the Spicheren heights. These he believed to be

*With the exception, perhaps, of Craufurd, the famous commander of the Light Division.

a small rear-guard. In reality, they numbered 27,000. The Prussian force was increased during the course of the day to 30,000, but had Bazaine and his subordinate commanders acted with greater promptitude a reinforcement of 30,000 men might easily have been brought on to the field. The Official Account, determined to do nothing to discourage initiative, discovers that "the independent action of the 14th Division was perfectly in union with the spirit of German generalship, which directed every effort to hang closely on the adversary." That this partakes somewhat of the nature of a *suppressio veri* may be suspected from the fact that on the following day, when it was uncertain whether the French were retreating or had taken up a fresh position near Bouzonville, the advance of the infantry, set in motion by von Steinmetz, was stopped by a direct order from the King, and the task of keeping touch assigned to the cavalry alone. Again, at Gravelotte, as the author of "Der Volk in Waffen" has pointed out, the leader of the 9th Corps, intended to maintain a demonstrative action against the enemy's front until the turning movement should be developed, was not explicitly instructed to this effect, and hence came about the premature engagement of the corps, the losses and withdrawal of its fourteen batteries.

These criticisms are made in no carping spirit. But whilst we may admire to the full the excellence of the Prussian organization, the soundness of their system of practical training, their magnificent discipline, the self-devotion of the officers, their superabundant energy, and their unshrinking acceptance of responsibility, it is, of all things, unwise not to recognize their faults. None are readier to do so, now that the majority of the great leaders of 1870 have passed to a bourne where criticism is powerless to annoy, than the Germans themselves. No more scathing stricture, not only on tactical procedure but on the bearing in battle of both officers and men, has ever been published than the pamphlet of German origin, "The Summer Night's Dream," which lately appeared in this journal.

"The time," says Laymann, in the "Frontal Attack of Infantry," written after 1870, "which is spent in making good dispositions and introducing the attack is never lost. * * * The least we can do is to make the most careful preparation in order to secure the greatest possible chance of success."

"Whenever it is possible," says von der Goltz, "the advance of a well-ordered development of the forces should precede entrance into fire. * * * A careful arrangement of the battle secures the simultaneous and collective employment, if not of all forces, yet of the major part of them. It spares much bloodshed, and, in the course of battle, readily recoups the time it has lost. * * * The action of the future," he adds, "will demand more thorough preliminaries, a clearer comprehension of the object to be attained, a more careful arrangement, a more intimate co-operation of all three arms, and the simultaneous employment of all available troops to decide the combat."

It is not without reason that attention has been drawn to the methods of war as practised by Wellington and Lee. After the war of 1870, and its stupendous successes, a school arose amongst us which saw nothing but perfection in the army and the methods of the victors. It is difficult to

get rid of the idea that the very warmth of the opposition which the new ideas excited drove these critics to extremes. That the opposition was strong is certain ; but looking back at the conflict, now that the excitement has passed away, it seems as if both parties were partially in the right. The one cried with truth that a reform in tactics was absolutely necessary ; the other, with equal truth, that its opponents had forgotten that there were " *fortes ante Agamemnona*," and great wars before 1870. In the minds of some was, perhaps, working the unconscious feeling that what Wellington had handed down was not to be lightly discarded. The experience of the Crimea and of the Mutiny taught others—and there was much experience in the ranks of the British army—that in the disorder, the precipitation, and recklessness of the new methods, lurked the seeds of great disasters ; and the majority of English soldiers were loth to throw away, at the bidding, as it were, of a foreign nation, the heritage of tactical skill which is the birthright of our race. Neither in England nor in America did the new theories meet with aught but a grudging acceptance. And the instinct that withheld them was sound to the core. For many a century we have been bound apprentices to war, and it is not strength nor courage, pride ourselves on them as we may, but sheer tactical adroitness, the quick perception of the means to the end, the mingled *finesse* and resolution which success demands, that have wrought our triumphs both by sea and land.

To the mingled strain of Norseman, Celt, and Saxon, we owe that combination of staunchness on the defensive and *élan* in the attack to which even the greatest and bitterest of our enemies paid a generous tribute. But such attributes are not sufficient of themselves, and to whatever era of our national history we refer we shall find that they have been supplemented by the tactical skill which was necessary to their full development. It is true that victory has not always been constant. The memory of our ignominious expulsion from the Low Countries in 1792 was obliterated by the triumphs of the Peninsula. But neither the disasters of the war of the American Revolution, nor the defeats which marked the War of 1812, have a place in our catalogue of failure. Inflicted by an enemy who was flesh of our flesh and bone of our bone, they can no more be cited as a proof of our inferior aptitude for war than Bannockburn or Prestonpans. " *Pares aquilas, et pila minantia pilis* "; our own were the hands that smote us. The same tenacity which retained the ridge of Waterloo retained, with Howe and his troops in possession of Philadelphia, the defiant American battalions in their winter camp at Valley Forge, dwindling slowly and exhausted, but still unable to recognize that they were beaten. The same quick perception which immortalized Torres Vedras, and taught our generals how to destroy the columns of the French, raised the entrenchments of Bunker's Hill, extemporized the defenses of New Orleans, and taught the colonial levies that their only chance of coping with the well-drilled battalions of the English army was to imitate the tactics of the Indian and the snare that had been laid for Braddock. To English soldiers of the present generation, who are accustomed to have held up to them the supremacy of Prussia in all things warlike, this may appear a startling assertion. But if history be examined it will be found that it is an assertion susceptible of proof. From

Cressy to Waterloo, from Sluys to Trafalgar, from Plassey to Tel-el-Kebir, the same characteristic is always present. To what do we owe the successes of the Peninsula? Principally to the line formation, and its superior development of fire; secondly, according to General de Segur, to the manner in which the defensive positions were occupied. It was the custom of other nations with whom the French fought to man the crest of the position, and he relates that not only were their troops thus exposed to artillery fire, but that when the attacking column ascended the slope the bullets of the defenders passed over their heads. The British troops, on the contrary, were generally posted at musket-range in rear of the crest. Here they suffered little from the hostile guns, and when the attacking column surmounted the hill it was received with a heavy frontal and overlapping fire, and was then charged with the bayonet. Again, although it is a fact which is often disregarded, the Peninsular army won even more victories when attacking than defending, and here the line played an all-important part. Wellington's formation for attack was in several lines, following one another in close succession; and it is worthy of remark that it was in all probability an instinctive adherence to traditional methods that won the Alma. The formation in three lines, due rather to the memory of Salamanca than to any set purpose, forced of itself the way to victory. These were the tactics, then, that defeated the conquerors of Europe, and they were by no means novel. In the days of Marlborough, as in those of Frederick, the line was the normal order of battle. When the majority of nations, after the outbreak of the French Revolution, saw fit to break entirely with the past, and to imitate the columns that had worsted them, England held fast to her traditions, meeting the new tactics by modifications of her system, extending the front by employing two ranks instead of three, and shielding the third line, whether in attack or defense, by a cloud of skirmishers. Prussia, on the other hand, although she still retained the linear tactics of Frederick the Great at Jena and Auerstadt, employed no skirmishers, and the men still stood three deep. At Wagram, also, the Archduke Charles marshalled his Austrians in line, but again without those modifications which gave the formation sufficient strength to oppose the onset of the French.

It is a curious fact that none of the French marshals in the Peninsula nor Napoleon himself at Waterloo attempted any other method of attack except that of deep column preceded by skirmishers against the English. Neither the formation in small battalion columns, nor continuations of line of column, giving a broad front of fire as well as weight for the charge, which had been the rule up to Austerlitz, and had been resuscitated by Napoleon in 1814, were ever employed. It may be noted, however, that both at Alexandria and Maida they failed; and so the English tactics, combining the elasticity of the new order with the vigor of the old, proved superior to the tactics of the nations who disdained reform as well as to those of the French, who had altogether discarded the experience of the past.

It has already been implied that the Americans in the Revolutionary War gave proof of their kinship, although the method of showing it was

scarcely fraternal, and the Secession War is strong evidence that years of separation have in no wise impaired the aptitude they then displayed. With a regular army of less than 20,000 officers and men, possessing no more experience of service than that won in the Mexican Campaign of more than twenty years before, and in punitive expeditions against the red-skins of the western border, the nation found itself plunged into a conflict on the vastest scale. And yet, despite the absolute ignorance of war and its requirements which existed amongst the mass of combatants, despite the lack of experience, the tactics of the American troops, at a very early period, were superior to those of the Prussians in 1866. In organization and in discipline there were gross shortcomings; in strategy, grave errors were committed; but on the field of battle the racial instinct asserted itself. The success with which, from the very first, the cavalry was employed on the outpost line puts to shame the inactivity of the Prussian horsemen in Bohemia; and, whilst the tactics of the Prussian artillery against the Austrians were feeble in the extreme, the very contrary was the case in the Secession War. If the necessity of preparing the way for the assault by silencing the enemy's guns, and shaking the *morale* of his troops by a heavy bombardment, was not always realized, the batteries, nevertheless, were always massed when the ground permitted, and, so early as Bull's Run, we find the gunners on both sides rendering effective support to the infantry by boldly pushing forward into the fighting line. Nor were the larger tactical manœuvres even of 1870 an improvement on those of the American campaigns. In many respects they were identical; flank attacks and wide turning movements were as frequent in one case as in the other; and not only were the victors of Sedan anticipated in the method of attack by successive rushes, but the terrible confusion which followed a protracted struggle, and for which Prussian tacticians still despair of discovering a remedy, was speedily rectified by American ingenuity. That the American troops acting on the offensive, were not called upon to face so formidable a weapon as the *chassepot* is true enough; the effects of fire were not felt at so great a range, but their tactical formations were far better adapted to preserve cohesion than those of the Prussians. Moreover, if it be asserted that such formations were impossible against the breech-loader, there is no doubt whatever that the Americans made more careful preparations for attack, were far more zealous to reform the ranks after every phase of battle, and, whilst developing a broad front of fire, kept within proper bounds the initiative of their company commanders. An American officer, speaking of the extraordinary intermingling of units and the delay in rallying at Koeniggratz, writes as follows:—"The German troops were green in 1866. The American troops of 1865 would have assembled much quicker. But in 1862 the Americans would have been nearly as slow about it as the Germans."

Nor is the fact that the tactical capacity which is claimed as the birth-right of both English and American soldiers has been found wanting in individuals a valid argument against its existence in the mass. Many a man is a soldier in name who is morally unfitted for command. There are men so bound by regulation and method as to have lost all power of initiative, who are incapable of assuming responsibility, whose only guide in battle is

the diagrams of the Drill-book, and who have lost the ability of adapting principles to circumstances.

Moreover, tactical instinct seldom acts by inspiration. It is seldom possible, when confronted by an enemy who employs novel and unexpected tactics, to devise on the field the best means of meeting them.

To maintain that every Englishman or every American is naturally a better soldier than any Frenchman or any German would be ridiculous, but that a capacity for conquest is inherent in the English-speaking race it would be useless to deny. Whether this attribute is the gift of Providence, whether it is the outcome of climate, of freedom, or of blood, is a question with which we have no concern; it is enough that it exists, and we have, therefore, no need to ask another nation to teach our fingers to war and our hands to fight, nor are we bound to accept the tactics of 1870 or the German Field Exercise of to-day as infallible and conclusive.

But, at the same time, we cannot afford to despise the experience of others. As regards the tactics to be employed against a civilized enemy, we have scarcely sufficient personal data on which to build. To understand the moral and physical effect of modern fire-arms, to recognize the dangers that beset a modern battle-field, the obstacles that we shall there meet with, the enhanced difficulties of command and of manœuvring, we must turn to recent history, and with recent European history, so far as war is concerned, we have fortunately had nothing to do. It would be unwise, moreover, not to give full weight to the conclusions at which Continental critics, practically enlightened, have arrived, but it is not essential either to assent to or to adopt these conclusions.

We have to prepare for war under present conditions, and we must prepare for it on certain definite lines; but judgment should be suspended until we have mastered the experiences of the breech-loader battle, until we have considered the effects of differences of organization, of discipline and *morale* which exist between ourselves and others, and have decided whether deviation from principles and methods, which not tradition merely, but success almost unvarying has hall-marked, is justified or not. To quote Colonel Maurice, "the less we imagine we can dispense with any of the lessons of the past, the sounder our conclusions will be." Such is the fashion after which we should exercise the critical faculty, and, fortunately, the instinct which leads to sound conclusions is present to preside at our deliberations.

In a second article the offensive tactics of 1870 will be compared with those of England and America, and the latest theories of certain German critics will be discussed.

(*To be continued.*)

NOTES OF LECTURES ON ARTILLERY IN COAST DEFENSE.

(*Proceedings of the Royal Artillery Institution.*)

BY MAJOR A. C. HANSARD, R. A., INSTRUCTOR OF GUNNERY.

(*By permission.*)

Continued from No. 63, page 608.

PART IV.—FIRE DISCIPLINE.

THE object of fire discipline is to ensure uniformity in the shooting of the guns.

Without good fire discipline no effective fire control is possible, and the best tactical scheme of defense will be rendered useless. The whole value of artillery in coast defense may, therefore, be said to depend on the efficiency of group commanders, group officers, gun-captains, and gun-layers, who are responsible for maintaining fire discipline; and this fact cannot be too often or too strongly impressed on those officers and N.-C. officers.

This is especially necessary under modern conditions of fighting guns, since the fire commander is usually at some distance from the guns, and errors of shooting, due to bad fire discipline, are less easily detected by him; thus misleading him (or the operator in the position-finding system) as to the result of his fire. He will naturally suppose that an error in the shot was due to his calculations, and will correct accordingly, when, if the cause of the error at the guns is no longer in operation, his next shot will probably have an equal error in the opposite direction.

Good fire discipline simply consists in rapid and correct drill under all possible circumstances, in correct loading with the ammunition ordered, in accurate laying at the proper objective, in the correct application of any corrections which have to be made at the group, as, for instance, that for group difference, and in firing the guns neither too soon nor too late.

Time is an essential point in firing at moving objects, and all drills are drawn up with the object of ensuring that the various operations shall be performed as safely and quickly as possible. It must be remembered that haste is not speed, and that rapidity of fire can only be ensured by each number doing his own work, and only his own work, quickly but without hurry.

Many details of loading are of the utmost importance; for instance, the use of too wet a sponge, a gas-check or wedge-wad forgotten, the charge not properly rammed home, will all result in a loss of muzzle velocity, consequent loss of range, and the certain throwing away of that shot; and will probably so mislead the fire commander as to cause him to make a false correction for the next shot, thus throwing away that also.

As regards laying, any error in setting the sights, or in actual laying, or

in not remembering to depress last, will cause errors in range and direction ; again misleading the fire commander (or operator).

When depression range-finder is used if the gun-captain does not fire the gun in the precise time laid down, the fire commander's correction for "time of firing" will be thrown out, and as he cannot know to what cause the error was due, he will be misled as to his corrections.

This point should be impressed on gun-captains, that the order from the group officer to commence firing means that the guns are to be fired if they are properly laid (Case II) or if the laying is completed in the proper time (Case I). It is better for a gun to miss its turn and wait for the next prediction than to mislead the fire commander. Gun-layers, of course, must not give the signal that they are on, unless they are properly laid.

Group officers must be careful to give the order to commence firing the instant the dial shows the required range, if any delay occurs the "time of firing" correction will be vitiated ; they must, therefore, watch the dial closely as the hand approaches that range. Should a group officer become aware, after firing, of any circumstance which might render the result of the round unreliable, he should communicate at once with the fire commander, through the group commander if there is one, in order that the fire commander may not be misled. When group salvos are fired there is less chance of an error, in the service of an individual gun, misleading the fire commander ; as the average result of the whole of the shots would be taken to base the correction on ; and any considerable difference of one shot from the other would show that something was wrong with it ; this is a further advantage of firing by salvos. This does not, however, excuse any relaxation of watchfulness over the fire discipline ; under modern conditions of objects moving at high speed, and a comparatively small number of heavy guns taking considerable time to load, the number of shots that can be fired at the object is not great ; and we cannot, therefore, afford to throw away ammunition. The number of shots that can be fired under given conditions can easily be calculated ; for example, a 10-inch M. L. gun in a casemate is able to bear over an arc of 70° , this gun takes $1\frac{3}{4}$ minutes to load and lay ; suppose a vessel passes parallel to the front of the battery at an average range of 2000 yards and at a speed of 12 miles an hour, she will cross the arc of fire in about seven minutes : therefore, if the gun was ready to fire the moment it could bear, five shots in all can be fired at her.

The necessity for superior accuracy of laying with modern ordnance is further shown, if we consider that an error of five minutes in laying will cause an error in range at 2000 yards of

29 yards with 64-pr. R. M. L. (converted) gun.

42 " " 10-inch R. M. L.

100 " " 10-inch B. L.

These considerations make it evident that, the better the weapon, the greater is the necessity for a high standard of training, intelligence, and care, on the part of those who have to use it.

Bad shooting is sometimes caused by the racers being out of level ; this when quadrant elevation is given by index plate, multipliers, or in fact by any means except some form of clinometer, will cause errors in range as

well as direction. These errors should be ascertained and allowance made at the gun for them under the direction of the group officer. If the errors are not great an average can be struck and applied as a permanent correction; but if they are large and vary much, it would be better to always lay by clinometer or by tangent sight; of course, guns in a group must not be laid, some with tangent and some with quadrant elevation, owing to the different corrections required to be made in each case by the fire commander.

A couple of illustrations from actual practice may serve to emphasize the above remarks on the necessity of thorough fire discipline. In the first case a standing target was being fired at, a depression range-finder being used to find the range; the first shot as observed by depression range-finder fell 100 yards short, a correction of this amount was made by the fire commander; the second shot fell about 100 yards over; 50 yards was taken off by the fire commander, and the third shot fell 50 yards over; for the fourth shot the original range was reverted to and a hit obtained. On returning stores a wedge-wad too many was found; this was evidently omitted the first round, causing the shot to start forward in running up, and thus giving too short a range. Now in this case not only was that round wasted in which the fault of fire discipline occurred, but the next two as well. In the second case a moving target was the object, good practice was being made at it, when a temporary cessation of fire was ordered, the guns being loaded and run up at the time; on resuming practice in a few minutes time, the next salvo was very short, correction was made and the next was equally over; taking off this correction again resulted in as good practice as before it was put on. The cause of this was traced to the use of too much water in the sponge tanks; for all the rounds, except that in which the pause occurred, probably an equal time elapsed, or nearly so, between the loading and firing; so that an equal powder error in each case was caused; in the round where the delay took place the water in the bore had more time to act on the powder and thus caused an increased error; and resulted in the throwing away of two salvos.

To sum up the responsibilities of various officers in action as regards the points mentioned; the section commander, at the commencement of an action will indicate to the fire commanders the objectives he wishes them to attack; pointing out the probable nature of the enemy's tactics and the general idea of the defense; informing them at the same time, if possible, the type of the vessel or vessels he has allotted to them. During the action he will not interfere usually, except by directing the fire commanders to attack fresh objectives as may become necessary.

The fire commanders, by the aid of their tables of ships, decide on the best way to attack their objectives; namely, what projectiles to use, and what part of the vessels to direct their fire upon; and regulate the trajectory of the guns; changing the form of attack from time to time as the range changes and a fresh method becomes advisable.

The group officers, supervised by the group commander, superintend the fire discipline of their groups; carrying out the orders they receive from the fire commander.

In conclusion it must be remembered that the subject of the proper use

to be made by artillery in coast defense is one that constantly receives new developments. The introduction of new weapons and improved means of fighting them ; and the addition by foreign powers of vessels of new type to their navies, continually introduce new elements into the problem ; therefore constant study is necessary if we wish to keep abreast of the times.

We must not allow ourselves to relax our efforts to make our part of the coast defenses as perfect as possible, from any false sense of security from attack. As has been pointed out by General Gilmore, U. S. A., in deducing the lessons to be drawn from the coast operations of the Civil War,* " where interests of great magnitude are at stake, ordinary prudence would suggest that as little as possible be left to the caprice of chance. * * * Fleet arrayed against fleet leaves too much to risk an accident, with our stake on the issue immeasurably greater than that of the enemy. These maxims unmistakably point to the necessity of depending mainly for the defense of our coasts on those agencies, exclusively our own, which cannot be neutralized or duplicated by our antagonist, and will, therefore, always keep him at a disadvantage, to wit : permanent shore batteries and their accessory channel torpedoes."

" The office of permanent fortifications is chiefly to avert attack." But they can only be effective for this purpose if those who have to defend them are so skilled in the use of their weapons, as to make the attack of such fortifications a difficult and costly task.

THE TRAINING OF CAVALRY FOR RECONNAISSANCE.

BY CAPTAIN H. L. PILKINGTON, 21ST HUSSARS.

(*Journal of the United Service Institution of India.*)

CAVALRY in war has, speaking broadly, two great functions to fulfil. One is to fight ; the other to reconnoitre. In every duty of the arm the fulfilment of one or both of these functions is aimed at. It is true that in practice the two classes of duties so intermingle that the value of an arbitrary distinction may at first be doubted. Outposts, for instance, have equal shares of fighting and reconnoitring ; the mass of squadrons advancing to a grand attack, must reconnoitre the enemy and the ground up to the very moment of the shock ; the most advanced patrol or the single scout, whose duties form the nearest possible approach to pure reconnaissance, may at any moment have to fight in self-defense or in order to achieve the object in view. But the importance of the distinction I have drawn lies in the difference between the training of the man-in-the-ranks as a fraction of the fighting body, and his education as an intelligent reconnoittrer. He is taught to fight in the ranks by drill ; and the aim of drill is to get complicated and ever-changing tactical combinations carried out mechanically, with the least possible exercise of thought or judgment. Its essence is unreasoning obedience to the command which admits of only one

*" Battles and Leaders of the Civil War," Vol. IV., pp. 70-71.

interpretation ; and its tendency is to dwarf power of observation, quickness of thought, the habit of self-reliance—in short, to eliminate from the working of the soldier's mind every quality which, as a reconnoitrier, he must be taught to cultivate. The scout and his immediate commander must be governed by circumstances not by command ; and observation, self-reliance, quickness of thought, and soundness of judgment, are the very qualities on which their efficiency as reconnoiters depends.

Last year Captain Lawford, of the 1st Madras Lancers, read here a most valuable—I think I may say a famous—paper on "Cavalry Tactics," that is on the fighting function of the arm.* I should have been glad to attempt a sequel to that paper. But apart from my own inability, this is hardly possible, for our starting points are very dissimilar. He was able to take for granted the elements of his subject, those elements which are contained in the manuals of drill. He began by having not only instructed soldiers to talk about, but squadrons, regiments, brigades, and divisions, drilled on an established system ; whereas I am obliged to confess that I do not know where the cavalry recruit is supposed to begin his education as a reconnoitrier, or on what system that education is supposed to be carried out. I must therefore begin with elementary matters, and, though I will spare you any but the briefest sketch of them, they will form the chief subject of my paper ; and it will be impossible for me to do more than touch upon such interesting matters as the working of the cavalry screen, or the handling of the independent brigade or division in contact with, or during the search for, the enemy.

Let me frankly say that I believe reconnoitring to be, in modern war, a more important duty of cavalry than fighting, and that I am certain that efficiency in reconnoitring demands greater expenditure of time and labor than similar efficiency in fighting. Yet I hope that in saying this I may not be held to underrate what my arm can accomplish on the field of battle. So far from doing so, I firmly believe that the rapidity with which cavalry can move has acquired a quite new tactical importance in these days of ever-extending zones of fire—an importance which has never yet been duly appreciated by any military writer I am acquainted with. And I am quite prepared to see a mass of horsemen sweep the field of Armageddon—electricity, high explosives, smokeless powder, magazine rifles, and mounted infantry notwithstanding—provided only that those horsemen have prepared the victory by successful performance of the strategic duties which appear in modern war to be the necessary prelude to successful battle. Nor do I wish it to be thought that I undervalue precise and rigid drill. On the contrary I believe nothing to be more dangerous than the tendency to despise accurate knowledge of the details of drill, and to consider such knowledge as necessary only to the drill-sergeant, a tendency which is the result of experience gained only in petty and irregular warfare such as our troops are most frequently engaged in. I plead, not for less drill, but for more instruction in equally important duties. And I will endeavor to show that some of this might be accomplished by an improved economy of time.

*See *Journal of the U. S. I. of India* No. 87, 1891.

I maintain, however, that it is the custom of our service to devote too-little time to training in reconnaissance, and that our standard of efficient reconnoitring is, to say the least of it, not high enough. I believe moreover, that we lose the value of much of the education and intelligence possessed in these days by the average recruit, by omitting to train his mind, when he first joins, in any higher military sense than that in which the drill-instructor may be said to cultivate it. And I am certain that the absence of any regular, progressive, and sufficiently detailed system of instruction in his duty as a reconnoittrer, is responsible for much of the diffidence regarding this duty too often displayed by the old soldier who has been taught, in the succeeding years of his service, by different instructors, each one with theories and a system of his own. Let me add that we—of the British service—have perhaps hardly yet realized how hard and how unremitting is the labor necessary to keep a short-service cavalry up to the level demanded by the conditions of to-day.

I much regret that the the third volume of the new cavalry drill has not yet reached India. I should like to have made sure of being, in all that I would apply to the training of troops, within the spirit, and indeed the letter, of what is there laid down. It is perhaps one of our points that the letter of the law is too little respected in our peace training; and, if so, we, the regimental officers who have to carry the humbler details of that training out, are largely responsible for any flaws that may be found in the code we work under. For the surest way to have a bad regulation altered is to obey it to the letter, and it should be our object in time of peace to let the flaws of our system be recognized, rather than to conceal them at the risk of a breakdown in time of war.

I will, however, take advantage of the absence for the moment of authoritative instructions regarding the subject of my paper, to put forward ideas which may not prove to be in accordance with those instructions when they appear. I do so, however, for purposes of discussion only, believing, as I do, that it is not only necessary from a disciplinary point of view, but of paramount importance to efficiency, that in the actual training of our men we should be at all times within the four corners of the "red book." It will not be worth while to distinguish between what is in accordance with obsolete regulations and what I should be glad to see embodied in the new ones. I will therefore treat the subject, from this point, entirely without reference to any rules officially promulgated. It will nevertheless be seen, from what I have to say, that I believe we should advance in the direction of fuller and more precise regulations rather than towards over-reliance on individual inspiration, and that I regard with suspicion a tendency to trust the future of our arms to uninstructed common sense.

I know it is now generally admitted, as a result of modern experience, that independence of thought and action on the part of subordinates and individuals, must, for reasons which I need not enumerate, in future warfare largely take the place of centralized authority; though centralized authority, under conditions that no longer exist, was once rightly regarded as the first principle of military command. But independence of action must not be confounded with independence of the object in view, or with

independence of those sound principles which apply in all circumstances. And, in cultivating the habit of acting in accordance with circumstances and without definite orders, we must be careful not to disregard the necessity for such training as will secure that individuals will act not only independently, but also in the right way. Our object should be to inculcate sound principles and to deduce from them general rules by which independent action may be governed. The true meaning, I take it, of the independence which is to replace centralized authority, is action in accordance with such principles and rules in contradistinction to dependence on definite orders. And, if this is so, the training necessary under old conditions, so far from being dispensed with, must be replaced by something much more difficult and much more thorough to suit the new order of things.

I have now tried to indicate my general point of view, and, without further preface, will proceed to the details of my subject.

The training of cavalry for reconnaissance may be conveniently dealt with under the following headings: (1) the training of the individual soldier; (2) the training of the squadron, which may now be regarded as the chief unit of instruction; and (3) the training and exercise of larger bodies.

Training of the Individual Soldier.

A reason has been already given why the training of the individual cavalryman in reconnaissance might well be begun as soon as he joins, and carried out simultaneously with the other branches of his training as a recruit. But, if this is to be done, some regular and progressive system must be devised, so that instruction may be uniform, and that every soldier may be able to work as well under any leader as under the one he was instructed by. To advise such a system is a serious and difficult task; and yet it is what every squadron leader in our service must, under existing conditions, do for himself, if he is to have a system of instruction at all, and if he is given no direction to work under other than those contained in the manuals published by authority. All I can do, therefore, is to lay before you the principles by which, as a squadron leader, I endeavor to be guided in the training of my own squadron, and to explain how I have attempted to reduce that training to a system which, as far as it is applicable under present circumstances, I try to apply to my work. My principles are probably often unsound and my system faulty. I put them forward, however, in no spirit of over-confidence, but rather submit them to criticism in the hope of eliciting from others much more than I can possibly expect to teach.

No doubt among the duties of the reconnoiturer there are many which can only be practically learned with a larger body than a squad of recruits; but, on the other hand, there is much that can be taught to the squad and the individual; and those who have had most experience in the training of young soldiers will probably be the first to admit that the simpler matters which can be dealt with before the squad stage is quitted, are those in which the young soldier and his instructor find their greatest stumbling-blocks. We must remember that, well educated though the average recruit may be, he is frequently town-bred, and has seldom had any training in that field-craft which our pursuits have made a second nature to most of us. To

understand exactly where his training should begin, we must try to comprehend the difference between his experiences in this respect and our own. Let any one who wishes to do this, get together a few young soldiers just out of the riding-master's hands, take them into the country, and direct them to carry out such simple orders as these: tell one to ride a quarter of a mile towards the north; another to look over a wall and report what he sees at the other side; ask another to ride to the top of a neighboring hill and place himself where he can see the ground beyond without exposing himself unnecessarily to view; and a fourth to deliver the simplest verbal message to a third person. I venture to predict that the results will generally be astounding, though they need not, on reflection, lower our estimate of the British soldier's capacity; but they will give us useful information as to where the reconnoiturer's education should begin, and will prevent our taking it for granted that all young soldiers know many things which they have had no chance of learning, things we have had to learn ourselves, though probably by a process we were unconscious of.

Practical field-craft must, no doubt, be acquired in the field, most of it after the recruit has become more or less proficient as a horseman. Is it then good economy of time to begin his training as a reconnoiturer before he has learned to ride? I know the prejudice which exists against what is called theoretical—that is indoor—instruction. Such instruction alone is no doubt almost useless; too much of it is unquestionably bad economy of time; and, in giving it, it should be remembered that the power of concentrating the mind on such instruction has to be acquired, and is less developed in proportion as the mind has been less scholastically educated. The illiterate recruit of old days could profit little by it, but every year the men who enlist are becoming more and more capable of mastering the theory of their profession and applying it for themselves. It is therefore the worst possible economy to reject indoor instruction as altogether useless, though, without doubt the indoor lessons should be short, not over-condensed, and not too frequent. Half an hour or less well spent daily, or even on alternate days, during the time before the recruit can take his horse into the open, would give him some idea of the nature of reconnaissance and outpost duty, and he would experience later in his training the undeniable pleasure of applying in practice what has been learned theoretically. Such a method would also do much to counteract the cramping tendency of the lessons in riding-school and on the barrack square.

This early instruction might be made, by avoiding detail, to cover the whole subject of reconnaissance, and might be brightened by selected instances from military history. To begin with, the reconnaissance of country should be distinguished from the reconnaissance of an enemy; and, in illustration, the objects of the ground-scout and the combat-patrol might be explained, these being the simplest forms of either class of reconnaissance. The duties of patrols entrusted with missions of various kinds, the work of the point, of advanced and rear parties and flanking patrols, even of connecting files and orderlies, may be taught. The precautions to be taken by large or small bodies halted or marching, and the methods of examining different localities, will supply the subject of many lessons. The

value of extreme accuracy in reporting or repeating messages should be inculcated; and so, by degrees, the more advanced portions of the subject may be approached, and the duties of advanced and rear guards, of the contact squadron, and finally of the largest masses used to screen the most extended operations of war, touched upon in general terms. Such instruction will not be thrown away, and will, I think, facilitate the instructor's work when he can take his pupils into the field.

Once there, the details of each man's duty in every situation must be carefully and thoroughly taught. From what has been already said the manner of beginning this instruction may be guessed. The first step towards finding the way over a strange country is a knowledge of the points of the compass, and of the practical means of fixing them. Let us suppose a squad of recruits to be taking their first lesson in the field near Secunderabad. The course of the sun, and its position at different hours of the day, and at different seasons, would naturally be first explained. It might next be pointed out that the direction of the prevailing wind, the southwest monsoon, is plainly marked on almost every exposed tree, and that the profile of any tree most affected by it can be easily determined by riding round and examining the tree from different points of view; that, if the direction of any severe storm be observed when it takes place, the lie of the crops or long grass laid by it, will for some time fix the points of the compass. Mosques, which can be easily distinguished from other buildings, it may be observed, always face the east; and Mahometan graves are always made north and south, the head, which is usually marked by a stone or by a larger stone than the feet, being at the northern end. Such guides as these having been explained, the recruits should be made to fix the points of the compass by them till they are thoroughly understood. All should certainly be taught to fix the points of the compass at night by the pole star and the moon. Then instruction must be given in estimating distances in miles by the eye and by the time taken in riding them, and each man taught to ride at any ordered rate expressed in miles *per hour*. Though trained to trot his horse at 8 miles an hour and to walk him at 4, it will not strike every recruit that, by dividing the time equally between walking and trotting, he may regulate his pace at 6 miles an hour. The arts of reporting what has been seen, and of repeating verbal messages accurately, should be practised. Practice in the elementary matters already referred to may soon be combined by sending the men with messages from point to point, leaving them to find their own way, and ordering them to ride at named rates of speed. A written record of each verbal message sent, of the time of departure, and the pace ordered, might be sent in an envelope with each man. Mistakes can then be pointed out at once, which will add much to the value of the lesson. When a message is delivered, the bearer should be questioned as to matters which may have come under his observation at the point from which he was dispatched, or on his way across country. Very early in the course of instruction each man should be taught to avail himself of every means of seeing without being seen when scouting, and to take advantage of such helps as trees and buildings, when time permits, to extend his view. A series of simple questions by which to get information from the inhabitants of the country

should be familiar. Here in India a few questions which can be answered by "yes" or "no" or by signs, may be translated into the language of the country, and learned by heart, or carried by the men. Some instruction should be given in estimating the strength of bodies of troops, the amount of supplies of various kinds, and of judging the suitability of ground for cavalry action ; and the habit of keeping an eye open for anything of military significance, should be encouraged by every possible means. Throughout the instruction, and throughout all instruction to the end of the soldier's career, economy of his horse's strength must be kept in view as the object of the cavalryman's unceasing care. No horse must for a single stride go faster than the trot, unless it is necessary that he should get over the ground faster than he can go at that pace, and the trot should seldom be a fast one. It cannot be too constantly kept in mind that fast trotting is a pace for harness, but is quite exceptional for the saddle-horse ; and that when halted, even for the shortest time, the horse should be relieved of his rider's weight. A scout forming part of an advanced or rear party, or of a flanking patrol, should be taught that his duty consists in seeing all that is to be seen without at any time riding much faster than the body he is detached from, and that this can be done without any difficulty by constantly looking ahead and deciding which are the points of vantage to be aimed at, before those points are reached.

The earliest lessons in actual scouting should be confined to the duties of ground-scouts and combat-patrols, for both of which ample instructions are to be found in the drill-book. The duties of a single advanced scout or flanker from a small patrol may be next practised, and then those of the advanced and rear parties and flanking patrols of larger bodies. The importance of keeping one eye, so to speak, constantly fixed on the main body of the party from which the scout is detached, cannot well be dwelt on too much, and the habit of doing this should be confirmed by the instructor frequently changing the pace and direction, or suddenly retiring. Some rules should be adopted, and each man should acquire a knowledge of them, as to the much debated distance which a scout should keep from the body he is scouting for, or from his nearest support. His distance from the body he is scouting for varies according to the strength of that body and the nature of the country. The considerations which regulate it are, (1) that an approaching enemy must always be seen and reported in time to prevent the main body being attacked in unfavorable ground, or so suddenly as to be unable to retire or prepare for action ; and, (2) that the scout should never lose touch with the main body and run the risk of being lost, in case it has to retire unexpectedly, or to give chase to retreating hostile scouts. From the first of these considerations it follows that, when the main body is small, the distance between it and its scouts need not be so great as in the case of a stronger party, since a party of three or four men is not easily surprised, can retire anywhere as fast as it can be followed by superior force, and can show all the fight it is capable of in almost any situation. I should say that, during instruction, 400 or 500 yards (and I lean to the smaller limit) is the greatest distance that a single scout should be from a patrol of any strength, while this distance may be reduced, under

certain conditions, to almost any extent. An advanced or flanking party consisting of more than one man, may of course keep touch with the patrol and have its most distant scout much further out, if the principle be observed that the most distant man of such a party is its eye, and the others merely connecting links. The system of causing two or more scouts to follow in one another's tracks on a flank, or placing several scouts abreast as an advanced party, appears to be always objectionable. The advance should always be piloted by a single scout, though in wooded country, or when approaching towns or villages, this scout must be closely supported; and when more men than one are used as flankers, they should move in an extended line, all except the outermost being regarded simply as connecting files. A strong patrol must, on this principle, extend its sphere of observation to the front and flanks by increasing the number of men detached in those directions, not by pushing single scouts or small parties dangerously far away. Smaller patrols will often find it necessary to move bodily to a flank to gain a point of observation without separating its men too much, or may halt while the commander or a single man, supported perhaps by others, rides to such a point, and, having seen what there is to be seen, returns to normal position. But it is in the nature of things that a small party cannot reconnoitre such an extent of country as a larger one, and it must be remembered that when a broad front has to be searched, either a stronger detachment or a greater number of small ones must be used. In fact extended observation to the flanks of its line of advance forms no part of the duty of a reconnoitring patrol. When the commander of a strong patrol desires to extend his observations far to a flank, he would usually do so by detaching a portion of his command, as a separate patrol, to perform the duty.

I have digressed from the subject of individual training in order to show that the distance of a scout from the body he is scouting for, or from his nearest support, though variable, varies only within certain limits, if regarded from the point of view I have tried to indicate; and that, whether my conclusions are right or wrong, the considerations which govern this variation can easily be generalized into a rule. I know this is a point on which great diversity of opinion exists, but the rule, as I read the principles, should be that the scout or his immediate supporter must never be in such a situation that they cannot at once conform to the movements of the main body; that they should be within easy seeing distance (not exceeding 400 or 500 yards) of the main body itself, or of some one who is in similar touch with it, either directly or through other connecting links.

The general dispositions of a patrol when halted would be much the same as when moving, but, when a halt is made, the scouts might increase their distance considerably (say to 800 yards under the most favorable conditions), if by doing so they can occupy better points of observation; their touch with the patrol or its commander must, however, not be lost, and the general principles of outpost duty will apply. When halted, also, the rear must be watched with as great care as other directions, though, on the move, a separate rear party is only required by patrols of considerable strength. At night the same principles which govern the distribution by

day will apply, but will of course necessitate a great drawing together of the different portions of the party, which may often have to move in a compact body with only one or two men pushed on ahead.

A patrol in future will probably often consist of a "group," that is of six or seven men under a non-commissioned officer. This number of men will therefore be a convenient number to instruct together. I will ask you to follow me through a short typical lesson to such a number of men (say six), the instructor acting as commander of the patrol. The instructor will first explain to all his party the orders he has received. The patrol, which is detached from a contact squadron at A, is ordered to reconnoitre in a north-westerly direction as far as the village B, six miles distant. It is to follow a country road, along which the squadron will advance two hours later. B is to be reached in an hour, if the enemy is not found; and a report is then to be sent back to the squadron, along the road followed by the patrol. At B the patrol is to await further orders. If, however, the enemy is found at any time, he is to be kept in view and followed, information according to the circumstances being of course sent back to the squadron. All reports sent too late to find the squadron leader at A, are to be sent to B; and, if when they reach B, he is not there, they are to move along the road from B towards A so as to meet him.

The name of the village B, and its position with regard to A, must be fixed in every man's mind, as well as any information available about the road which connects the two places. The patrol then marches at a jog trot. The men are sent ahead as an advanced party, for the country is undulating and an unsupported scout would have to halt before passing below the crest of each undulation, or else frequently lose sight of, or be unseen by, the commander. Two men are detached, one to the right and the other to the left, as flankers. The country is open, and the track follows the course of a valley with a slight ridge on either hand. The road at first is level, so that the two men of the advanced party ride, one in front of the other, about 50 yards apart; that being a convenient distance, as we shall see when a crest crosses the road, or when a bend takes the advanced scout temporarily out of direct touch with the patrol. The advanced scout keeps about 400 yards in front of the patrol. The crest of the ridge on the right is 300 yards distant from the track; so the right flanker rides near enough to the crest to see all the ground beyond. He has sometimes to show himself on the sky-line in doing this, but, as a rule, he keeps a little below and within the crest, taking advantage of all good points of observation, and of any trees or other objects on the crest which may, acting as a background, reduce the chance of his being seen against the sky. On the left the ground slopes up gradually for half a mile, so that the crest on that flank is too far distant for a single scout to follow. While he is unsupported, the left flanker therefore rides about 300 yards to the left of the patrol. In that position, it is true, he can only see the ground as far as the top of the crest, and can practically see that no better than the main body. Nevertheless he remains out in order to be nearer to his work when the character of the ground changes during the advance, or when the commander sends a man or two to support him, as he will do if he wishes the ground beyond the crest to

be observed. The flanker remains out because, by doing so, he economizes horseflesh ; though, if the ground were intersected or stony, he might rejoin the main body for the same reason. The commander rides in front of the main body, which now consists of two men. He makes it his especial business to watch the advanced party, and directs one of the men with him to keep an eye on the right flanker, while the other watches the left. When the road passes over a crest, or a sudden bend takes the advanced scout out of sight, his supporter waits just short of the crest or at the bend, till direct communication is restored, regaining his position afterwards, by a slight increase of pace. Presently the crest of the ridge on the right recedes from the road to a distance of 700 or 800 yards, and at the same time, a long strip of unridable marshy ground appears intervening between the ridge and the road. The right flanker then closes in towards the main body, and follows the inner edge of the marsh, so as not to run the risk of being separated from the patrol in case it should suddenly move to the left. Soon a patch of wood appears on the left front, extending about 300 yards to that flank. As he approaches it, the commander sends the two men with him to support the left flanker. They incline towards him, and he at once increases his distance from the commander so as to pass through the wood near its further edge. One of the men supporting him rides into the wood about 100 yards to the left of the road (judging that at that distance he can see the commander occasionally through the trees), and the second rides a similar distance on his left. All three ride parallel to each other and on the same front, each carefully keeping touch with the man next him towards the commander. As soon as the wood is passed, the two men last sent out incline again towards the commander and gradually rejoin him, while the original left flanker closes in to his original interval. This he soon reduces again to 150 yards, because the ground on the left has become dotted with trees, which would make direct touch with the patrol difficult if he rode further out. On reaching a high spot on the track, the commander sees a village half a mile ahead, through which the track passes. He at once halts, and tells the two men with him to trot on and assist the advanced party in reconnoitring the village. The advanced party, seeing support approaching, halts till joined by the two men. The oldest soldier of the four then directs two men to ride round the flanks of the village. As soon as they have turned it, the oldest soldier and the fourth man gallop through it, one about 50 yards in front of the other. Meanwhile the commander approaches to within 400 yards of the village, the flankers keeping abreast of him. The village being unoccupied, the oldest soldier of the advanced party conveys that information by a preconcerted signal to the commander. The commander then rides to the village, where the two men sent on to assist the advanced party await him. The original advanced party rides on 300 or 400 yards ; and when all have passed the village, the original order of march is resumed. After this the commander may assume that he has seen, by the help of his field-glass, the enemy's scouts on the hill about a mile away to his right front. He wishes to get close enough to them to keep them in sight ; so he starts towards the hill at a steady gallop, all the men of the patrol following him as well as they can. When the top of the hill is

reached, the hostile scouts may be supposed to be seen retiring towards a troop of cavalry which is halted in the open nearly a mile away. The commander then writes a short report of what has taken place, adding that he will keep touch with the enemy. He reads this to one of the men with him, and gives it to him to carry to the squadron leader at A. It is found that the road from A to B was left about four miles from A, and that it is 50 minutes since the patrol left A. The bearer of the message is therefore directed to retrace the tracks of the patrol to the road, and to ride back along that road towards A, to the squadron leader, at the rate of 8 miles an hour.

The lesson may end here. It has of course covered only a very small part of the duties of a patrol, and is given merely as an example of the method to be followed. But a few such lessons, repeated till thoroughly understood, in different classes of country, will do much to give confidence in reconnoitring, and will conduce to workmanlike and intelligent performance of such duty.

I have spoken of preconcerted signals; but I should be glad to see a simple code of signals laid down by regulation for the use of reconnoiters, like those provided for ground-scouts and vedettes, even if it only consisted of two—say, the helmet waved above the head to signify "all clear," and the sword or carbine held up horizontally to intimate the presence of the enemy.

There are many subjects which should be embodied in lessons similar to this, but which I cannot, within the limits of this paper, touch upon. A few of the more important are the carrying of verbal reports; the artifices by which prisoners may be taken, and those by which a messenger may pick his way through an enemy's country; the searching of houses; what to observe about roads, railways, rivers, bridges, fords, etc., and the treatment of defiles.

Then, under the head of individual training must be included the training of non-commissioned officers, and a few privates with a talent for it, in military topography; which is most necessary, if only to ensure intelligent map-reading. But the excellent official text-book makes any attempt to deal with this subject unnecessary.

I will now proceed to

The Training of the Squadron.

The system of squadron organization which has just been introduced in our service, now makes the squadron the unit of instruction in a sense in which that expression could never be applied to it before; and will, I think, greatly facilitate instruction in such subjects as that under consideration.

Assuming that the officers, non-commissioned officers, and some of the men most likely to be selected for promotion, have been instructed in military topography; that the squadron contains 8 or 10 signallers; and that all the men have undergone such an individual training in reconnaissance as has been sketched; it will be the duty of the squadron leader to keep all up to their work by constant practice, and to accustom the squadron to

its work, either as a contact squadron or when ordered to reconnoitre some defined locality; to train each troop and each group to work as a reconnoitring patrol under its own leader; and to teach all under his command to perform their duty with the smaller officers', or non-commissioned officers' patrols consisting of from 2 to 5 men with a commander,

In doing this, it will be well to distinguish clearly between the duty of a detached patrol, or contact squadron, which moves off to carry out distinct instructions, and forms an independent command; and that of the advanced or rear party, or flanking guard or patrol, which has at all times to keep touch with a larger body, for which it provides immediate security. It would be well, I think, to accept this distinction in its entirety, as it appears to be no arbitrary one, but to belong to the natural order of things; though it was, I believe, first thoroughly recognized in the provisional regulations issued for the Italian cavalry manœuvres in Lombardy in 1890. In those regulations it was distinctly stated that reconnoitring patrols are *not* responsible for the security from surprise of the contact squadrons behind them, that those squadrons are *not* responsible for the security of the main body from which they are detached, and that the cavalry screen is *not* responsible for the security of any corps of troops in rear of it; but that the object of these bodies is to discover the position and movements of the enemy, and to prevent the enemy's cavalry from obtaining similar information about their own side. A further distinction must also be drawn between a body, small or large, detached to seek for the enemy in a given direction, and, having found him, to keep touch with him wherever he goes; and one sent out to examine a particular locality, whose duty ends when that locality has been reported on.

With so many men to train in duties which only a few can practise together, the squadron leader must have some system which will enable him to supervise the whole, and secure uniformity of instruction. With this object, I would suggest that he should carefully prepare several reconnaissance schemes of different kinds, some to be carried out by complete troops, some by single groups (as they are defined in the new cavalry drill), and some by smaller officers' and non-commissioned officers' patrols. He could then take out his officers and non-commissioned officers, and instruct them together in the details of each scheme. The lessons thus learned can afterwards be imparted by the officers and non-commissioned officers to their own troops and groups; and it will be thus made certain that their instruction is sound from the squadron leader's point of view.

It will be advantageous, as far as possible, to cause two parties to work one against the other, so as to leave as little as may be to the imagination, and to test individual talent by actual results produced.

When the squadron comes to practise reconnaissance as a whole, or when strong patrols detach smaller ones to carry out some separate portion of the work to be done, the greatest care should be taken in giving precise instructions as to where reports are to be sent. A commander detaching a patrol from his command, may either direct reports to be sent to him to different points at different hours, or to be sent direct to superior authority in rear; and, if he takes the former course, he must either be at the points

fixed at the appointed hours, or have established correspondence posts at them with further orders as to the disposal of reports. To make such arrangements requires time, but the time necessary for them will not be wasted, and the arrangements should never be neglected.

Written, in preference to verbal, reports should, as far as possible, be insisted on; and the transmission of reports in duplicate and triplicate, by different routes, should be practised.

I cannot refrain from saying here a few words about what are sometimes called "*reconnoitring formations*." This term is usually applied to an attempt to do what I believe to be impossible—namely, to enable one commander to conduct a reconnaissance on a broad front, without deputing independent command to his subordinates. He is usually expected to arrange his subordinates, with their small detachments, in a row, and from a central position in rear, to control them as if by leading strings. The attempt, as far as I can judge, always fails; and, even supposing it to succeed so far as the maintenance of the commander's control is concerned, it is plain that the advance of the whole reconnoitring line must be checked by anything which checks a single part of it—that the delays encountered by a single "*reconnoitring group*," will be multiplied by the number of such groups in that line. It may be added that the country to which such a system can be applied at all, is extremely rare. It appears to me that no party under one man, can reconnoitre on a broader front than is covered by the vision of its flanking parties, and that the object of such a party being to push forward and find the enemy as quickly as possible, its advance should never be hampered by considerations of what its neighbors on the right and left may be about. The first maxim of the *cordon* system of outposts—that all the country watched by the line must be under observation—has some general application to reconnaissance, but the second—that each post must always be seen by those on its right and left—has no such application whatever; and the idea of a reconnaissance conducted by a regular line of observing parties, like a sort of marching outpost line, appears to be based on an entire misconception of what reconnaissance means.

I must now pass on to, and deal very briefly with, my third heading.

The Training and Exercise of larger bodies.

The regiment of cavalry cannot in any sense be considered a unit for the purpose of reconnaissance, and may simply be regarded as four squadrons collected by chance under one command.

In exercising these squadrons together, the principles to be kept in view will be the same as in the case of a larger number, or of the brigade or division. The training, therefore, of bodies larger than the squadron, may be dealt with as a single subject.

Since all reconnaissance must be regarded as the prelude to probable fighting, for which concentration of the cavalry will be necessary, and because patrolling is most harassing work to man and horse, the smallest possible number should be employed on this duty. The contact squadron has no place in advance of a force of cavalry less than a brigade; and contact squadrons, or strong patrols, need never be used unless they are intended

to push many miles to the front, beyond the reach of support, where they must, so to speak, carry their own fighting strength with them, and be provided with a large reserve of men and horses to carry back reports. Reconnaissances in advance of small columns, or those which it is known will not extend far to the front, should usually be made by weak officers' or non-commissioned officers' patrols. Let me instance the reconnaissances which are made when the troops in such a garrison as this are exercised as two opposing forces. The distance between them is, at most, a few miles, and a fight is known to be imminent. Under these circumstances, a squadron contains a far greater number of men than is required to carry out the reconnoitring for either side, while to detach one seriously weakens the force remaining in hand for the fight. In such cases, I feel sure, a very small number of weak patrols under officers or non-commissioned officers will be found to do the work quite as satisfactorily as whole troops or squadrons, while by sending such patrols out from different squadrons, the services of the best men in each will be secured, and the fighting power of the force retained in hand will not be appreciably diminished.

With regard to the more extended reconnaissances carried out by the brigade, division, or even larger force, I cannot now do more than put together a few general principles, which are, for the most part, deduced from the reports of recent foreign manœuvres, or borrowed from the writings of a few recognized authorities.

The commander of the screen must retain as large a force as possible in hand. In the case of a very large body (say a division) covering a broad front, this force may be divided into two, or even more, columns. Contact squadrons will be pushed out to the front from these columns, and patrols from the contact squadrons. In addition, officers' patrols may be sent out by the commander of the whole, either to push on to special points in advance of the contact squadrons, or to reconnoitre ground between the regions assigned to adjacent squadrons. Under no circumstances should a contact squadron be expected to extend its observations over a broader front than 5 miles, or one of the weaker patrols over a broader front than 2. The normal distances between the different portions of the screen, before touch with the enemy is gained, may be taken (as a rough guide) as follows: The reconnoitring patrols from 4 to 6 miles in advance of the contact squadrons, and the contact squadrons from 10 to 20 miles in advance of columns. Each column, and each contact squadron, will of course provide for its own immediate security by an advanced guard and flanking detachments. During the advance the commander of each contact squadron will send patrols to the front with orders, as a rule, to await him at fixed points on the line of his advance. Some miles before such fixed points are reached by the squadron, relieving patrols will be sent out to push further to the front, and, in their turn, be similarly relieved and picked up by the squadron. The contact squadrons should, if possible, be relieved every second or third day in a similar way. Each patrol from the contact squadrons, or from the columns, and each contact squadron, is in the first instance given a line to follow, to which it must adhere till it comes into contact with the enemy. Having once found the enemy, it must cling to

whatever hostile troops it has gained touch with, and follow those troops wherever they go. The contact squadron replaces any of its patrols which may be drawn to a flank in performing this duty, and similarly any gaps in the general front to be reconnoitred, caused by contact squadrons being in the same manner drawn away from the lines assigned to them, must be filled by fresh patrols or squadrons from the main columns. The transmission of information to the rear may be aided by the establishment of relays of correspondence posts detached towards the front from the main columns. As contact with the enemy becomes closer, the contact squadrons will gradually work closer to their patrols, and the main columns closer to the contact squadrons. The columns, however, will be much influenced in their movements by the necessity for meeting the masses of the enemy's cavalry in advantageous ground.

Seeing that the arms and characteristics of cavalry have been, since the earliest historical times, much what they are to-day, and that the duty of reconnaissance has always pertained especially to this arm, it may seem strange that there should still be any need to discuss the elements of the subject before us. The explanation is that the records of war seldom give much detailed information regarding the performance of this important duty, so that the experience of our predecessors is for the most part lost to us; and that the very extended reconnaissances rendered necessary by modern conditions, form a new feature in warfare, and have, in no campaign that has yet taken place, been so thoroughly carried out as it is probable they will be in the future.

In conclusion a few points of general importance in connection with my subject may be touched upon.

It seems remarkable, considering the importance of time, direction, and extended observation, to all engaged in reconnaissance, that no watch, compass, or—if we except signallers' telescopes—any field-glass, forms part of the equipment supplied at public expense to our cavalry regiments.

In the general matter of equipment, it is pretty generally admitted that room for improvement exists. Our horses are at present over-weighted in a manner which must seriously cramp our power of extended reconnoitring, and hamper us in the performance of every duty; and I do not believe that there are any obstacles to improvement in this respect, other than the ever-obstructing prejudice against change, and the familiar difficulty of obtaining due recognition for the urgency of any innovation which involves expenditure.

In practice during peace, I fear our love of the excellent quality called smartness, sometimes tempts us to attempt reconnaissances without taking time to make sound plans, or to issue the carefully considered orders necessary to carry them out; and to launch ourselves into such operations at an imposing rate of movement quite incompatible with service conditions. Quickness is, no doubt, the essence of reconnoitring; but there is no class of duty in which undue haste is more dangerous or more out of place. More or less time is absolutely necessary before a reconnaissance is undertaken, and the enormously increased waste of horseflesh, which would be caused on service by sending horses long distances at unnecessarily rapid

rates, cannot be too carefully guarded against. It would be well to recognize some standard rate of speed at which reconnoitring parties may, under ordinary conditions, be expected to advance. I do not believe that, in the most favorable country, even a small patrol can, without much galloping, push its way to the front much faster than six miles an hour, exclusive of halts to feed and rest men and horses. In this connection, let me quote a paragraph from the cavalry regulations of 1887, which, I think, contains much food for reflection. It is to be found under the heading, " Instructions for the Division or Brigade Covering an Army," and runs as follows: " The following is the approximate time necessary for a march of fourteen miles, when all the precautions necessary in the presence of an enemy are observed, and he is known to be in the neighborhood :

	On a good road.	On a bad road.	Under the most unfavorable conditions—snow, frost, etc.
" 1 Regiment or Battery H. A.,	4 hours	6 hours	9 hours
" Division of Cavalry,	4 hours	7 hours	12 hours

" The above is the time the head of the column will take."

Within the limits of a short field-day, it is seldom possible to estimate justly the value of the information supplied to the commanders of sides by their reconnoiters. Its accuracy is necessarily only roughly estimated, and the rapidity with which it is conveyed to the right points often escapes comparison with what ought to be possible. If I may offer a suggestion on such a subject, let me say that I believe the necessary time would be well spent, if occasionally, during field-days and manœuvres, operations were suspended for sufficient time to allow the commander of each side to record the actual distribution of his own force, and all the information regarding the distribution of the enemy which his reconnoiters have supplied him with. A reliable test would then be applied to the work done, and I think we should arrive at very valuable conclusions as to what is possible for reconnoiters, and how it can best be accomplished.

In dealing with my subject, I have not hesitated to put forward opinions of my own, many of which, I admit, are open to discussion, and in many of which those far better qualified to judge than I am, will, I know, not concur. I have, however, made my own humble opinions my groundwork, and have spoken freely in the first person, because I believe that to be the most convenient way to draw out from others the results of their individual thought; and because I believe that much thought has still to be applied to the training of our cavalry for reconnaissance, before we can boast that we are capable of performing in the most efficient way, in time of war, that arduous and never-ending task.

FIELD GUNS.

Précis of Lecture

BY CAPTAIN J. E. W. HEADLAM, R. A.

At the

ROYAL UNITED SERVICE INSTITUTION.

HERE have been advocates, the lecturer said, for the admission into our field artillery of howitzers, heavy field guns, light field guns, heavy horse artillery guns, light horse artillery guns, quick-firing guns, and even machine guns for the horse artillery. With the latter, which are now generally regarded as concentrated infantry fire, he did not deal at all. The revival of the howitzer, he pointed out, practically dates from Plevna. The Russian artillery did not shine on that occasion, and the army were very justly dissatisfied with them; but, without doubt, modern field guns have little searching effect against earthworks. The Russians took the lead in introducing a howitzer for field service, which should have the power of searching out the defenders of such works by high-angle fire, and should further possess a shell heavy enough to break through and destroy overhead cover. The question has been a good deal discussed on the Continent, and General von Sauer has come forward as the great champion of vertical fire; but I do not think that even he has ever proposed that existing field batteries should be turned into howitzer batteries. What seems to be the more general idea, has been the formation of a comparatively small number of special batteries, outside the organization of army corps and divisions, which should be at the disposal of the Commander-in-chief for special purposes; filling, in fact, exactly the same position as our heavy batteries do in India.

Putting aside the question of machine guns and of howitzers, and leaving for the present that of Q.F. guns, many combinations of the others have been proposed, all of which the lecturer explained. After examining the various combinations of guns which have been proposed, the lecturer pointed out that we have gone further than any other great power in the direction of uniformity. We have got, he observed, one gun, and he thought he might safely say that the experiment had not been a success. He hoped we should soon see the end of it, and scarcely expected that the experiment would be repeated. He was of opinion that two natures of field guns are necessary, but not more, and that the best division to make is the natural one between horse and field artillery. In creating a new equipment, both the field and horse artillery gun should be made of the design best suited for the work required of it without reference to the other. "Are these guns," he asked, "to be of the same calibre? It is a most difficult question. There are very strong arguments for and against. Those who are in favor of uniformity say that it is of the utmost importance that ammunition should, on an emergency, be interchangeable. This is, no doubt, very desirable, but does uniformity of calibre really give it? It is not as if the shell and cartridge were of the same weight. Range

tables cannot be made out in the heat of action, and, therefore, except for case shot, I can really see very little practical advantage, while any compromise of this sort entails a certain loss of power. Suppose our guns are respectively a 12- and 16-pdr., there can be no doubt that what is the best calibre for one will not be so for the other, and that if you strike a mean, it is the best for neither. I imagine that the cases would be so rare when this uniformity would be useful, that it is not worth the sacrifice; and I therefore consider that in creating a new equipment, both the field and horse artillery gun should be made of the design best suited for the work required of it without reference to the other."

Tactical Considerations which are of Universal Application.

To turn now more to detail. There are two main questions which must be settled before anything else, for they are tactical points, and must be put before manufacturing details. We, I am afraid, have not always done this. They are—1. The weight behind the splinter bar. 2. The number of rounds per gun to be carried. The first is of the most supreme importance. Every endeavor must be made to prevent theorists overloading our horses. An old smooth-bore of Waterloo days, in action, is more useful than the "best field gun in Europe" stuck fast in a ploughed field half a mile in rear. The limit for the weight of equipment should be, say, 30 cwt. for horse artillery and 37 for field—the wagons the same as the guns. But whatever the weight, it should be settled by field artillery officers, absolutely without reference to the manufacturing departments; and, once settled, should be unalterable as the laws of the Medes and Persians. Our horse artillery, hampered with nearly 40 cwt., *cannot* do what our grandfathers did with 28 cwt. Modern science has not increased the powers of our troop horses: the necessity for mobility is probably greater than ever. It is not the guns alone. We shall be very little better off with a light gun and a heavy wagon. The wagon must accompany its gun.

2. *The Number of Rounds per Gun to be Carried.*—Let us look at how the artilleries we may have to meet are provided in this respect:

Country.	Number of rounds per gun with the battery	
	Horse artillery.	Field artillery.
England.....	108	108
Austria.....	152	128
France	156	131
Germany.....	135	135
Italy.	143	130
Russia.....	130	150

And an extra wagon has recently been added in Germany. It is a very serious thing to think that our horse and field artillery may have to contend with foreign batteries, carrying, on an average, thirty rounds a gun more, and in every case (except the Austrian and Italian horse artillery) firing a heavier shell. Yet we who call ourselves practical people seem content with a paltry 100 rounds a gun; 150 is the least with which we should be satisfied.

Captain Headlam then critically examined the respective merits of a gun with a high muzzle velocity and of one with a lower muzzle velocity, and stated his belief that he should be expressing the general opinion of field artillery officers when he said that the advantages of a high muzzle velocity are in no way commensurate with its practical disadvantages. He admitted that the tendency on the Continent seems to be in the direction of high velocity. But we have tried it, and should use the experience we have gained, and not follow blindly in the footsteps of those who have only theory to guide them.

The lecturer then proceeded to a consideration of the several kinds of shell now in use. Shrapnel is *par excellence* the field artillery shell. A fact not generally known is that shrapnel will penetrate any ordinary brick wall, and burst the other side with most destructive effect. To make it fulfil all requirements, and to arrive at the great desideratum, uniformity, is simply a question of smoke. Space inside a shell is very limited, and as much as possible is wanted for the bullets. Is it possible in a small space to get a composition which will give a good smoke? No doubt chemists will solve the question, and once this is done we can use our shrapnel for ranging. If the common shell is done away with, there will be no excuse for the retention of the percussion fuse, and we shall have arrived at the millennium—one shell, one fuse. That fuse must be carried in the shell.

The high explosive shell is a subject shrouded in mystery. It has been tried in England, France and Germany, and adopted in the latter. As to what trials have taken place in England, Captain Headlam regretted to say that he had no information, but, as the high explosive shell is much talked of, he endeavored to put together what little he had been able to find out about it. The chief characteristic of the high explosive shell is its very violent action, which tears the shell into very small fragments, and spreads these in all directions. It follows that these fragments very quickly lose their velocity, and that therefore the ground covered is very small. Colonel Langlois put it at a radius of from ten to sixteen yards. In the failure to give a clearly visible burst for ranging, the high explosive is worse than the shrapnel, for it gives practically no smoke. The German regulations lay down that when firing high explosive shells the ring shell is to be used for ranging. In the number of man-killing fragments the high explosive shell is undoubtedly far ahead of any other, but they fail to cover a considerable space in depth. This is a quality in which the high explosive is very deficient. It is just this quality of shrapnel which is so valuable for the field, as it makes it so effective against moving objects, and when the range cannot be very accurately found. Against troops in ordinary buildings the high explosive is most effective. Its very local action and all-round effect is the very thing for a shell bursting in a room. Considering its deficiencies in the two points specified, high explosive shells are never likely to become a shell for general use. The high explosive shell will give increase in power against troops in houses and a possibility of causing loss to defenders concealed behind the parapets of field works; while, on the other hand, it is an extra projectile. A premature burst would probably put a gun out of action;

and for the ordinary work of the battle-field it is not so effective as time shrapnel.

We should, I think, therefore be very careful before we replace any of our very small stock of shrapnel with the new projectile. If it is to be introduced, it should be in addition to the ordinary supply of the battery, and should be carried in a special wagon, as in Germany, which would only be ordered up when required for some special purpose. Above all, let it be thoroughly understood what it can and *cannot* do, in order that the other arms may not expect from the artillery services which we are incapable of rendering. Listen to this, which I recently cut out of a paper professing to be technical :

"A New German Field Gun.—It is stated that a new field gun has been produced for the German army which possesses several advantages over the weapons at present possessed by any of the European Powers. Now four different kinds of projectile are used, but the new gun would only have one—explosive shell. These are substantial advantages; but a far greater remains in its destructiveness, its powers in that direction being prodigious. The splinters of a shell have been estimated to cover an area of 30 or 40 yards, but those of projectiles discharged from the new weapon cover a surface ten times as great, so that a regiment would in a few minutes be swept away by a single gun." *Prodigious* is certainly the right word; but if the German army expect their artillery to destroy regiments in this wholesale way I am afraid they will be grievously disappointed.

The four grand requisites for a gun carriage, in addition to the necessary strength, are, he pointed out: It must be simple; it must be light to handle; it must carry a few rounds; and it must have short recoil.

The first thing I think that would strike any one in studying the particulars of foreign artilleries is their very much larger percentage of useful weight, that is, of weight of ammunition carried as compared with our own. Here are the figures:

	H.A. per cent.	F.A. per cent.
England	34	34
Austria	44	48
France	29	35
Germany	46	43
Italy	41	41
Russia.	40	45

the average percentage being 40 and 42 per cent. respectively for horse and field artillery, while ours is only 34 per cent. I admit that our 5 ft. wheel must of necessity be heavier than their 4 ft. 7 in. ones, but I cannot believe it need be such a monstrosity as it is—52 lbs. heavier than the average horse artillery wheel of these five powers, and 47 lbs. heavier than their field artillery wheel. Another great cause of our carriage being so heavy is that the ammunition is all packed in small, removable boxes, which is not the case with continental Powers. This is, of course, to facilitate transport by sea, and was necessary in the days when it took six ships to carry one battery. It is now probably no longer so, and I hope that, by adopting a fixed

box, we may be able to carry a considerably increased amount of ammunition without increasing the total weight.

After the Boer war there was considerable discussion on the subject of shields in England, and it has recently been revived on the Continent. The conditions necessary for a shield can, no doubt, all be satisfied, but at a cost which in weight, including the arrangements for raising and lowering, may be put at $3\frac{1}{2}$ cwt. The question is: "Are we willing to sacrifice twenty-three rounds in order to carry a shield? or shall we do better to trust in our own fire as our best defense?"

Quick-firing Guns.

Turning next to the question of quick-firing field-guns, Captain Headlam observed that in favor of their fixed ammunition it may be said that the powder is perfectly protected from deterioration, and that the method of firing is undoubtedly less slow and clumsy; but on the other side there is extra weight and the danger of jams, and of explosion in limber. As to rapidity of breech action, our present service action is very quick. It is not the opening and closing of the breech which delays the fire, but the time taken in running up, laying, and fuse-setting. The cost in weight of this little extra rapidity is considerable. The breech-action of the 3-pounder Nordenfelt quick-firing gun weighs $45\frac{1}{2}$ lbs., and that of the 6-pounder nearly 78 lbs., while that of the Service 12-pounder, firing more than twice as heavy a shell, with double the charge of powder, is only 34 lbs. No quick-firing breech action can compare with our Service one in simplicity, that is, in the ease and rapidity with which any damaged part can be replaced.

"A Q.F. field gun should satisfy the following conditions:—"1. Ammunition in metal cartridge cases, with caps like those of small arms. 2. A breech action so rapid as to cause no delay beyond that necessary for laying and fuse-setting. 3. A breech action as simple as possible, both safe and easily worked. 4. A carriage provided with both elevating and traversing gear. 5. A non-recoil carriage, so that only the slight correction in laying for the vibration caused by firing may be necessary between rounds. Mr. Nordenfelt is quite right in saying that no gun can be called a Q.F. unless mounted on a non-recoil carriage; but any gun can be so mounted. Our service 12-pdr., for instance, would be very nearly as fast as a Q.F. if so mounted. This was shown when it was tried against the Nordenfelt 8-pdr. When the gun was not run up between rounds, the difference in rapidity was very small. The question is whether this increase in rapidity of fire is worth the undoubtedly disadvantages of a non-recoil carriage. But first it must be remembered that, in addition to giving greater rapidity of fire, the non-recoil carriage has several other advantages: It saves an enormous amount of labor to the detachments; it enables us to work the gun with fewer men; it makes the protection given by a shield (if one is introduced) far more complete. On the other hand, its disadvantages are very great. They are:—Great increase of weight; sacrifice of simplicity; necessity for traversing gear, and difficulty of turning the gun suddenly on to a new target. All non-recoil carriages have a plough under the trail, which digs into the

ground. This necessitates traversing gear for slight alterations of direction, and makes it very difficult indeed to throw the trail rapidly into a new direction when it is desired to change the target.

In conclusion, a few words as to this great rapidity of fire. The idea seems to be that a Q. F. battery should be in wait for the enemy, having previously prepared a certain number of rounds (how their fuses are to be set before trial shots have established the right length is not explained), and that then, at the given moment, they should overwhelm him with a very rapid fire. This is the fire by "gusts" or "squalls," of which we have heard a good deal lately. It is, I admit, a very taking idea. Is it practical? I wish I could think it; but my experience of the practice ground goes all against it. Do not let us forget that the duty of the artillery is to *hit*; would these gusts of fire conduce to *hitting*? Rapidity is of great importance, but accuracy is of greater. I confess that I think we are far more likely to get good results in the same time by a smaller number of larger shell, fired with careful observation. Let me read to you an extract from von Lobell's annual report on military affairs, or rather from a translation of it, which appeared in the Journal of this institution. It admirably expresses what I believe to be the truth in this matter: "Our view is that artillery now, as before, must adhere to the principle of observing every shot, even after the ranging is completed. The rapidity of fire will, therefore, not be materially altered. * * * If the ranging is incorrect, the rapid fire that follows is not only useless, but actually harmful; for it costs much ammunition, makes the recognition of the error committed more difficult, and *causes unsteadiness among the gunners.*" What says the Commandant, Okehampton, in last year's report? "No rate of fire, however rapid, can be considered effective unless it is regular."

OLD FRIENDS WITH NEW FACES.

(*From the Saturday Review.*)

THE old adage that there is nothing new under the sun receives illustration constantly in all matters, but nowhere more so, perhaps, in spite of the enterprise which we expect from our officers, than where war is concerned. To-day a controversy is raging as to whether cavalry shall, in future, fight most effectively on foot or on horseback. The Russians favor the former method, the Germans the latter, and the Russians have the courage of their convictions, and have given their dragoons a bayonet, much to the astonishment and disgust of the admirers of the "arme blanche." Yet we all remember how Macaulay illustrated the wayward and eccentric genius of Peterborough by quoting his action at Barcelona, when he captured the town with some dismounted troopers. But ages before the War of Succession Alexander had organized *diplazoi*, or cavalry intended to fight indifferently both on foot and on horseback, and attendants were attached to them to hold the chargers while the horsemen dismounted to act as infantry, after the manner of the horseholders of

the present day. Denison tells us that this seems the first instance of the use of dragoons, but we might seek further back still for the germ of the idea, and quote the ancient war chariots intended to convey an armed man quickly and without fatigue to the scene of conflict.

Peter the Great organized Dragoon Grenadiers in 1708 who were armed with muskets and bayonets, as are their descendants of to-day. We need not, however, go beyond the time of Napoleon to find a precedent for the Russian innovation which has so scandalized the *sabreurs* of to-day. The Carabiniers of the French army at the close of the last century were armed with carbine, pistol, sword, and bayonet. At Austerlitz there were still some thus equipped, and the small musket without the bayonet was retained during the war of 1809, although three years later it too was cast aside when Cuirassiers became fashionable. And besides these special Carabiniers Napoleon had a force of dragoons proper—that is to say, men trained to fight either on foot or in the saddle. In 1802 there were twenty-one regiments composed of such foot soldiers on horseback, although the tendency, we are told, was for them to turn into real cavalry, with perhaps some greater capacity for fighting on foot than had the others. This tendency has ever been inevitable, and to-day with us the fear is that our mounted infantry may, if their proclivities in such a direction are not interfered with, develop into a spurious imitation of Hussars. On the Rhine these dragoons of Napoleon did not succeed as did the cavalry pure and simple, and therefore they were sent away to Spain when war broke out in that country. Here their special characteristics found ample verge and scope ere long; for the desultory warfare of the guerrilla type carried on by the inhabitants of that country was exactly the sort of fighting most suited to them. Thus it was that by 1812 Napoleon had again increased his force of dragoons to thirty regiments. In addition there was a large force of Chasseurs-à-cheval in the French army.

To all intents and purposes these troops performed the same duties in Spain as are intended to fall to our mounted infantry, and our latest innovation is practically, therefore, but a return to the method of our great opponent at the commencement of the century. The modern breech-loader has its counterpart, too, in that invented by the ingenious Marshal Saxe, who achieved so much success with his novelty that he armed one of his regiments of Uhlans with carbines that were loaded in this way. He is also credited with the invention of an "organ gun," as it was then termed, or mitrailleuse; but considering that it took an armorer a quarter of an hour and the help of all his tools to load it, we can well imagine how it was that the suggestion was not followed up. It is remarkable also that our recent tactics in the Soudan, when we formed squares to resist the rush of our fanatical opponents, are simply a copy of those which Napoleon was compelled to adopt in that part of the world nearly a century ago. The Mamelukes, who were his most dangerous antagonists, were better trained and better mounted than any cavalry he had to bring against them, and, moreover, greatly outnumbered the French squadrons. He was obliged, therefore, to rely entirely on his artillery and infantry, and these were formed into squares, with the guns at the angles, just as our troops were

drawn up to stem the rushes at El Teb and Tamai. At Ulundi our formation was the same, and like us on that occasion, we read that Napoleon placed his baggage and his cavalry in the centre of the square, and when the foe was beaten launched the horsemen to the pursuit just as we loosed our squadrons on the Zulus. But another and celebrated feature of the French expedition was his organization of a regiment mounted on dromedaries, which constituted a species of dragoon force very useful in the desert, where horses marched with great difficulty. Now when we sent a corps of camelry up the Nile to the relief of Gordon the idea appeared to astonish many by its originality, and not a few amongst the general public were inclined to regard the innovation as fanciful, and savoring somewhat of a circus, or the resources of a Drury Lane pantomime. Especially was exception taken to the arrangement by which men were picked from infantry batalions, or regiments of cavalry, the household cavalry not even being exempted from the drain. Whatever disadvantages—and they are not a few—such a system of depleting the fighting strength of other corps in order to improve that of a favored one may have had, the great example of Napoleon may at least be quoted in defense of it. His camelry also was composed of carefully chosen infantry soldiers, armed with muskets and bayonets as usual, and riding, we are told, on a kind of Turkish saddle which covered the hump of the animal. The method of employing them in action was likewise, and naturally so, very similar to what it has been in our own time on the Bayuda Desert. The dromedaries halted and knelt down while the men dismounted and formed up in the accustomed manner as infantry, either in line or in square as circumstances required. It will be noted, however, that Napoleon only employed infantrymen in this particular kind of service. The employment of cavalrymen to fight in squares, dismounted, mingled too in some cases with foot-soldiers, is a more doubtful matter, and it is to our practice in this respect, that hostile criticism has most effectually been directed. By Napoleon's arrangement, each soldier carried ten days' provisions with him. It was at first arranged that each animal was to carry two riders; but subsequently it was found more advisable to mount only one, the space occupied by the other being utilized to carry provisions. After Napoleon's time Sir Charles Napier organized a force of the same kind, and turned it to good account in Scinde, so that there was really but little originality about our feats in Egypt after all.

The celebrated raids during the American War of Secession, and our own brilliant cavalry dash on Cairo, after the victory of Tel-el-Kebir, in 1882, had also their counterparts in the days of Frederick, and the swarms of Croats and Pandours which his opponents could bring against him, annoyed him as much as ever did the irregulars of the Confederates disturb the equanimity of the North.

What Carlyle calls the "circumambient atmosphere of Pandours" was "tenebrific" to the Prussians, and kept them in perpetual midnight. The partisan raid of General Haddick with 4000 men and four guns upon Berlin on the 17th of October, 1757, bears the very closest analogy to the feats of the American war. His force consisted principally of Croats, and by concealing his strength as much as possible, and keeping to the woods

chiefly on his march, he not only obtained a good start, but caused the numbers of his force to be grossly exaggerated in the reports which reached his opponents as to his doings. Having gained the neighborhood of the Prussian capital without opposition, he suddenly assaulted the Silesian Gate, and was soon in undisturbed possession of the suburb of the city. General Roschow, the commandant at Berlin, had a force under his command which was actually superior to that of Haddick; but, imposed upon by the rumors which had reached him, and panic-stricken by the bold front shown by the Austrians, he fled to Spandau with the Royal Family and archives, and left the capital to make its own terms with his enterprising opponent. At the end of a good deal of bargaining Haddick accepted £27,000 as ransom, and after a halt of twelve hours, marched off again, evading any attempts made to cut him off, and effecting a safe retreat behind the river Spree.

We have also a very curious instance of history repeating itself in respect to the imitation of the Germans which is at the present day so rampant in this country. A man writes a book on cavalry, and imagines he has done his work well when he copies pages almost verbatim from German regulations, and a lecturer appears to think he has silenced criticism when he appeals to the practice or authority of our neighbors. It is evidence of weakness when a man thus takes refuge behind the opinions of others, and of ignorance when others do not endeavor to oust him from his fancied security. Recently there have been, we are glad to see, signs of a more independent spirit, and voices have been raised in a manner that implies the growth of a less abject disposition. After the successes of the Great Frederick, the same slavish reverence for the methods of the victors, down even to the most insignificant trifles, prevailed; but an English military writer had pride enough then to rebel against the yoke. General Lloyd, the historian of the wars of those days, who had served in several campaigns of the master-spirit of the age, comments harshly and fearlessly on the great attention paid to numberless and insignificant trifles which occupied the minds of the armies of Europe in his time. The whole science of war was at length reduced to considerations as to how to adjust a hat or button. "They attribute," he writes, "the glorious victories of the King of Prussia to these and like puerilities." "Short clothes, little hats, tight breeches, high-heeled shoes, and an infinite number of useless motions in the exercises and evolutions, have been introduced without any other reason than their being Prussian." Are we not still under the spell, and do not many time-honored traditions of the Seven Years' War linger with us still? Was it not because the conquering Teutons wore the "pickelhaube" in 1870 that we forthwith discarded the head-dress worn by the majority of our troops, to substitute for it one ugly and unserviceable, with all the faults and none of the advantages of the model from which it was taken? If imitation be necessary, let us copy those portions of foreign military organization which are valuable, and not occupy ourselves with a pale and feeble reproduction of that which does not bring about the object with which men go into the field—the gaining of victories. Gravelotte and Sedan would have been great victories had the Germans fought bare-headed, or even in their shirt-sleeves; and that paladin, the fabled Uhlan, would have been equally valuable and ubiquitous if he had left his lance at home.

INSTRUCTION OF THE GERMAN RECRUIT ON VARIED GROUND.

Translated from the *Revue Militaire De L'Etranger*.

BY LIEUT. J. C. BUSH, 5th ARTILLERY.

THE German regulations, to whatever arm they apply, are characterized by an entire absence of arbitrary rules.

If they define the position of the man in ranks and the formation of the units in close order with a precision which admits of no variation, they impose no method for carrying the regulations into effect.

Still wider of application in whatever relates to extended order and manœuvres on diversified ground, they are here limited to general indications or to a simple statement of principles regarding the instruction of the company for field service.

Thus the infantry regulations, after explaining the individual movements and the formations on the drill-ground in the first part, entitled "The School," in the second part, entitled "The Combat," lay down as a guiding principle that the initiative is the best guarantee of success in war and that the object of military training is to develop in each soldier, energy, zeal, calm judgment and rapid decision.

How must this individual training be conducted which, under these conditions, assures the cohesion of the company and at the same time renders it pliant to the will of the leader? The regulations indicate no method, they even forbid any attempt to establish rules.

A cabinet order of September 1, 1888, is explicit in this regard: "Every addition, written or oral, tending to obtain greater outward uniformity or for any other purpose is forbidden. The latitude purposely permitted in the application and progress of instruction must receive no injury in principle."

Under these conditions, the only way to understand the order of ideas under which the company commanders plan the course of instruction for their men is to study the works published by officers showing how they employ the time and what length of time experience has suggested to them as necessary for the proper instruction of their companies.

A work of this nature recently published at Berlin under the title, "The Instruction of Infantry Recruits in the use of Varied Ground," merits attention on account of its simple and logical method.

According to this work, the instruction of the young soldier in the use of diversified ground requires ten weeks at the rate of two exercises a week. It commences the second week after the incorporation of recruits.

Before the arrival of the recruit contingent, the instructors themselves go through the entire series of exercises.

The instruction begins with the performance of a field exercise by the old soldiers at which the recruits take part as spectators. The choice of ground for this first exercise is not an indifferent one. The defenders must

be able to find cover and have a field of fire at least 800 metres in extent; the assailant also must have the means of taking different positions in the zone beaten by the fire of the defense.

At least two companies are united and the men provided with a sufficient quantity of blank cartridges so as to give the action an appearance of reality.

The defenders post some sentinels and detach one or two patrols, to meet which the assailants send out scouts.

While these exchange a few shots, the director of the exercise causes the recruits to observe the cover which the sentinels or patrols can use and the conditions under which they are well placed for shooting, etc.

Afterwards the attack develops and the instructors explain the reason for extended order, reinforcement, extension of the firing line, variation in the intensity of fire and successive rushes.

The director gives orders that the position shall be nearly stripped of men at the moment of assault so that the recruits shall understand that if the attack succeeds it is because of the superiority of fire and not on account of the form of the attack. The lesson ends with sending out patrols to pursue the retreating enemy by fire.

At the third week the young soldier commences to work by himself. From this time on all lessons include four distinct subjects of instruction:

1. The proper use of ground.
2. The use of the rear sight and the application of the rules of fire.
3. Distinguishing objects.
4. Estimation of distances.

From the third to the seventh week the instructors teach the men how the least accidents of ground, ditches, furrows, side of a wall, etc., can be used as a shelter, and also what resistance each of these covers opposes to modern projectiles. They insist that the recruits go through the motions of aiming and firing in all the positions required by each particular cover, repeating to them again and again that their duty consists rather in securing a good field of fire than in protecting themselves—"Action goes before protection."

Gradually they teach the recruits to use the spade for improving or strengthening the cover behind which they may be placed, and instruct them to work so that the earth thrown up may not be distinguished in color from the surrounding ground. They also mark out the beaten zone by means of men lying down so as to make the danger space evident to the eyes of the men.

During several lessons the recruit is exercised in posting himself rapidly as though under fire. Sometimes he is directed to crawl carefully towards shelter and again to throw himself behind it quickly.

In the use of the rear sight and in the application of the rules of fire, the out-door practice goes on at the same time with the theoretical instruction which begins at the barracks during the third week.

Gradually the man is taught to aim at objects from 100 metres to 600 metres distant, directly to the front or towards a flank, then rapidly at objects in motion.

It is not, however, till the eighth week that the recruit can handle his rifle as in campaign, that is, actually fire it, whether with false or with blank cartridges. The instructors take the greatest pains to accustom the men to aim in all positions and to convince them of the advantage of an aimed fire calmly delivered.

The exercise in distinguishing objects gives rise to a minute instruction in which appeal is made solely to the common sense and visual acuteness of the soldier.

The target in this case is always represented by men moving and taking positions as in actual service. From single targets they pass to groups arranged in view of the recruits, some exposed, others partly concealed and placed either high or low, in dense or thin formation. The men are thus familiarized with every appearance which an enemy presents in reality. Sometimes the instructor causes men to pass in view of the recruits and disappear, reappearing at another point. Whatever the object perceived, the recruit names it, calling out for example: "A sentinel towards the left," or "A patrol of three men marching in the open."

The estimation of distances begins with 50 metres and ends with 600 metres. These estimates are repeated many times on men who mark the distance or on objects upon the ground. Great care is taken to make the men observe the appearance of objects under different atmospheric conditions. This change of appearance is not simply described to the men, it must actually occur before their eyes, for a theoretical instruction not accompanied by practical application, is useless. The instructor also indicates to the recruit the effect of fire at each distance estimated.

By the eighth week the drills become definite exercises in attack and defense. Fire control is the object of scrupulous attention. Whether the instructor causes the troops to fire individually, shot by shot, or to fire rapidly or slowly, he must be actuated, not by an hypothesis, but by the appearance which the target presents at the moment. It is the same with the movements of the firing line. If the target appears in view, the firing line halts and opens fire; if it disappears or moves back, the firing line advances. It is only when targets more numerous than the line appear in front or on a flank, that the line moves to the rear.

The successive targets presented to view are varied as much as possible: silhouettes of men standing, kneeling, lying down or of cavalrymen appear according to the programme laid down beforehand. These are at times entirely concealed and revealed only by puffs of smoke. The recruits are taught to estimate the distance and search out by fire the place thus designated.

All this presupposes a carefully arranged programme suited to the particular idea which each exercise is intended to exemplify.

If standing men appear, they are not left stationary but are moved forward, to the rear or to a flank. If the targets placed on the ground are in panels representing fractions in close order, upon fire being opened, these panels change into a line of silhouettes separated from one another and representing men kneeling or lying down. At first the silhouettes are placed so as to stand out clearly and in zones corresponding to the different

elevations of rear sight which the men are using and the recruits are marched to the proper position facing them. Afterwards, the targets are more or less concealed in ditches or behind other cover and appear unexpectedly, either stationary, or in movement towards the front or flank of the line under instruction.

Just before each exercise the men representing the enemy or employed to work the targets, receive precise instructions when to reply to the fire, when to withdraw the targets and cause them to disappear or to move forward, and when to reinforce them. In this way the young soldiers see for themselves exactly what they have to do.

This method of instruction is addressed entirely to the eye and common sense; it excludes all hypothesis and all statement of principles which the intelligence of the men can but poorly comprehend. The man sees clearly all that he has to learn and is thus enabled to understand the why and the how.

The process certainly calls for a considerable number of targets and it absorbs quite a large personnel to represent the enemy and to work the targets, but this stage effect, this judiciously prepared representation of the details of service in the field, instructs the men more rapidly and surely than any amount of theoretical instruction.

Military Notes.

DECENTRALIZATION.

“PRESERVE likewise the rights of inferior places and think it more honor to direct in chief than to be busy in all.” In this sentence Bacon undoubtedly condemns a system of centralization, and sounds the keynote of all sound administration. Applying the system of centralization to the administration of a regiment, let us see how much the condemnation in the sentence quoted above is applicable thereto. What are the effects of centralization? Initiative and responsibility are destroyed, progress is hindered, incompetence is rendered difficult to detect, and inefficiency is produced. Initiative and responsibility are destroyed in subordinates if centred entirely in the commanding officer. Many are not content to think it more honor to direct in chief than to be busy in all. Subordinate officers consequently lose that keenness in their work which is so necessary to the production of good work. Where the scope for initiative is reduced to a minimum officers who soldier from love of the profession, and not as a pastime, will inevitably, as far as regimental work is concerned, look upon themselves as mere machines; and their sense of responsibility is in consequence destroyed. The power of initiative and sense of responsibility, being lost, how will it be, if, as is often the case on service, a young officer has suddenly to take the initiative and assume a position of responsibility often under conditions of great personal danger, and amidst the noise, excitement, and confusion of battle? Lucky for him if he comes well out of it, but if not, would it be just to blame him? It would be the system which in those circumstances would be mainly responsible which had destroyed his power of the initiative and sense of responsibility.

Incompetency is rendered difficult to detect, because where there is no chance of initiative or responsibility ability has little opportunity of showing itself, and the incompetent can thus escape detection in the enforced mediocrity of the competent. It is hardly necessary to say that where these evils exist, progress must be stifled and inefficiency produced. It is not hard to find the cure for these evils. Decentralization at once presents itself as the natural antidote, and though demanding a high training of all ranks, surely this should be no obstacle to its adoption. Any one who will take the trouble to observe the system in force in a Prussian regiment will have valuable testimony to the advantages of decentralization.

Clausewitz says, “The wise teacher restricts himself to the work of directing and assisting the mental development of his pupil, and does not try to keep him in leading strings throughout his career.” Every officer and man should be taught that each has in his separate sphere an important

share to contribute to the working of the whole, not that of a machine, but of an intelligent cooperator, whose initiative is courted. His sense of responsibility will be commensurably increased which should tend to heighten his self-respect and induce him to continually endeavor to improve. "The mind should be ready," says Clausewitz, "to act for itself under the emergencies of actual war." Every officer and man should be trained to be ready to apply sound principles of action and assume the initiative in any emergency, and to again place himself under authority when required, in order to secure that unity of action, willing coöperation and intelligent subordination which are equally necessary to the success of any undertaking.

To sum up, too much stress cannot be laid on the importance of all regimental instruction being carried out on lines tending to produce formation of the judgment and the power of initiative in all ranks. At present it is unfortunately too often the case that the commanding officer thinks that no one knows or can do anything as well as himself, and resents any expression of opinion from a junior which may differ from his own. The junior, knowing that any expression of his opinion differing from the commanding officer's will bring him into bad odor, keeps silent, and gradually schools himself to look with apathy on many things that might be improved.

Such a condition of things is greatly to be condemned, ruinous as it must be to all military efficiency. It cannot be too frequently or too forcibly impressed upon senior officers that the system of centralization is an absolutely indefensible one, and that no amount of personal keenness will compensate for the injury done by a disregard of what should be the first principles of command—divided responsibility and absolute faith in juniors according to the extent of their service and experience. It is the division of work and the faith in others which will in nine cases out of ten create intelligence and produce the ends which all should seek to obtain in a well ordered and effective military unit, be it regiment, battery, or battalion. Without decentralization military bodies in these modern times are absolutely unfit to enter upon the duties of a campaign, for directly they come in face of an enemy all centralization is upset by our new battle tactics; and their officers and non-commissioned officers are called upon to act on their own initiative to a great extent. How can they do so successfully if they have been trained in a bad school, one which denies them the opportunity of preparing themselves for the duties and responsibilities which war demands of them?—*The Army and Navy Gazette.*

EXPLOSIVES.

It is always difficult to measure accurately the progress made within a short period in chemistry, for effective compounds are often reached accidentally, and this is pronouncedly the case with explosives. We repeatedly hear of new explosives, invented, about which much is promised, but the annual report of Her Majesty's Inspector of Explosives, Colonel Majendie, indicates that none of these exhibit any strikingly new departure, being mostly modifications or slight variations of previously existing compounds. There is a vast variety of smokeless or quasi-smokeless powders on the

market, but these consist essentially of nitro-cellulose, or of the same material in conjunction with nitro-glycerine. There is the possibility of endless variety in the treatment of these, or in the ingredient usually added, and it would be a mistake to assume that these compounds may not lead, accidentally or otherwise, to further important discoveries. Thus it is that the measure of the year's progress is difficult.

An analysis of explosives chiefly employed continues to show a growing preference for the newer and more powerful compounds. Dynamite, which a few years ago held first place, has gradually receded, and only formed one-ninth of the number of explosives examined by Dr. Dupré, the chemical adviser of the Home Office. But more striking is the preference of the gelatine dynamite, formerly known as gelignite, and the decline of blasting gelatine, of which only five samples were submitted. While in 1891 out of 104 gelatinized explosives examined, 25 were gelatine dynamite, formerly known as gelignite, 63 out of 107 samples submitted in 1892 were of this compound. This is regarded as due to the fact that the gelatine dynamite is more easily manufactured, so as to be free from the dangers of liquefaction and exudation, than blasting gelatine. A large proportion of the samples submitted were rejected owing to the presence of carbonate of sodium, which, although admissible in dynamite, is prohibited in all cases of gelatinized preparations. The carbonate of ammonium always raises the heat tests, and it follows that unless the alkali can be got rid of before the test is applied, the test itself is of no value. With dynamite the nitro-glycerine can be separated and tested by itself; not so with gelatinized preparations, hence the difference, which is not always remembered by importers. The fact, however, that only 18 out of the 320 samples of all explosives submitted failed to meet the tests, indicates the care with which the compounds are made.—*Engineering, London.*

THE PHONOGRAPH AND ITS MILITARY USE.

At the Royal United Service Institution, an instructive paper on "The Phonograph and its Application to Military Purposes," was read by Lieut.-Colonel G. V. Fosbery, V. C., who, after referring to the number of appliances, creations of the civil engineer, the mechanic, the chemist, and the electrician, which have within but a very few years made good their right to be included in that vast assemblage of objects now known as matériel of war, turned to the phonograph, and remarked that it consisted of three principal parts. Chief of these is the diaphragm, after all a very old device for the reception and transmission of sound vibrations, now so familiar to us from its use in the telephone for this purpose. Colonel Fosbery recalled to remembrance how the old non-commissioned officer, as related in Baron Marbot's memoirs, when in doubt as to whether their small party was pursued by the Austrians, placed a drum on the ground, and, listening at the drum-head, at once detected the march of their troops, though then at a very considerable distance. The same device has been used from time immemorial for detecting the driving of a gallery by an enemy's miners. And in the latter case the dancing of a pea on the drum-head makes their motions visible as well as audible. In these primitive telephones the earth took the place of the wire

and the drum-head of the diaphragm in our more perfect instruments, and thus, *mutatis mutandis*, the plan has remained good down to the present day. In the phonograph we next have a tool or point, fixed in a frame, which will permit of vertical, but not of lateral, movement, and so connected with the diaphragm as to move with it. Thirdly, comes a cylinder, capable of being indented or inscribed by this point. This was formerly made of wax, but is now formed of some soapy composition, the exact nature of which is not generally known.

The recording points are now made either of ruby or sapphire, so constructed (small as they are) as to be able to be turned into three different positions, and become again available when one edge has become worn or blunted by use. The diaphragm, after trial of many substances and various dimensions, is now made of fine glass, about 6-1000ths of an inch in thickness and $1\frac{1}{2}$ of an inch in diameter, and to this the recording and repeating points in their appropriate mountings are attached by shellac varnish. In order to ensure accurate correspondence in speed, the phonograph is provided with a very sensitive governor, which can be set to regulate it within 1 per cent. of any number of revolutions per minute from 60, which is about the best for speech, to 160, which would be used for taking down a cornet solo. In the earlier instruments, when it was necessary for any reason to raise the point from the record, by hand, it required much nicety to be able to replace it exactly where it stood before, and much time was occasionally lost in the attempt to do so. Now small levers at the side of the instrument do what is required without conveying the slightest motion endwise to the point, and lower it into the exact spot from which it was raised. For copying or type-writing from the phonograph this is a great convenience. The machine as at present constructed is one differing in almost every respect, beyond first principles, from the early models of five or six years ago, one in which every necessary point has been carefully thought out, and every source of error as far as possible corrected.

Cases occur every day, whether in military, civil, or private correspondence, when the power of substituting a talk for a letter, and of conveying the actual words of the sender in his own voice to the recipient, secure from any possible indiscretion of a third person, must possess an inestimable advantage from a practical point of view. At first sight, for employment in the field, the necessity for carrying about a delicate and complicated machine, with its batteries or accumulators, would seem entirely to preclude its use in such situations. But the working parts on which its efficiency depends are extremely few and simple. Substitute for the electro-motor with its batteries, wires, and governor, some other power, and the cumbersome and objectionable parts of the machine are at once got rid of. Colonel Gouraud, Mr. Edison's former agent in this country, suggested an extremely light, simple, and portable form of the instrument, which can be easily carried in its leather case by an orderly, and used anywhere. It consists merely of the main screw and sliding diaphragm frame with their simple adjustments, and is worked by turning a handle at one end, the speed being accurately regulated by means of a small ball governor, and it will make a record which can afterwards be read off on a similar instrument.

Colonel Fosbery related that he had heard a record made by it during some field manoeuvres, and while a heavy artillery fire was going on, in which, however, curiously enough, the reports of the guns entirely fail to be reported, the phonograph taking no notice of such sounds, and refusing to write them down. The reasons for this are probably twofold—the first being the low tone of the sound, and therefore the fewness of the vibrations caused by it; the second, that the concussion of the air reaching both sides of the diaphragm at once the latter will be apt to remain nearly stationary, and whether for one or both of these reasons set down nothing recognizable. This peculiarity has, of course, its value, for the sounds of the voice spoken into the instrument come out clear and sharp, and are in no way drowned by the noise going on around. Now that the spaces covered by troops in action have been so immensely increased, laterally from the necessity for open order in face of modern infantry fire, and in depth owing to the great range of the field gun, it becomes every day more and more difficult to communicate orders and instructions from point to point. Flag and heliograph do good and important service, but the uncertainties which attend the use of the Morse alphabet in the coolest and best trained hands are well known, as also are the delays of cryptography and the additional chances of error which it introduces when this is employed, and the dangers of signals being read by the wrong people when it is not. Now, apart from the absolute accuracy of a phonographic despatch, and (when the voice of the sender can be recognized) its evident authenticity, nothing is easier than to cryptograph the message without an instant's delay. For, in order to read a phonographic message, the repeating machine must be an exact duplicate of that which made the record. The threads of the one screw more particularly must exactly correspond in number to the threads of the other screw per inch of its length.

If an attempt were made to read a record of a machine with 200 threads to the inch on a machine with a screw differing only by 5 per cent.—that is, carrying either 190 or 210 threads in the same space, it would entirely fail. If, then, we should furnish our military machines with two or three screws of different pitches, the number of the screw used for any message being scratched on the cylinder, we should at once get a cryptographic message undecipherable by any one not in possession of an equivalent screw. Like almost any other cipher, it might be worked out by special and delicate machinery at a vast expense of time and labor, and probably not until all the advantage of learning its contents had long ceased to exist. Besides, nothing is easier than to destroy such a despatch if in danger of capture, as the cylinder is crushed in the hand in a moment and its power of speech gone for ever. A written document may be intercepted, a telegraph or telephone wire tapped, flag or heliograph signals interpreted, but phonograph messages ciphered in some such way as here indicated could by no possibility become of immediate use to an enemy. In many cases they might be made to replace sealed orders with advantage, or contain plans and instructions for officers at a distance, which for one reason or another it would be important should only be known to those directly concerned. It is one thing to get a surreptitious look at a paper, and replace it case of the dan-

ger of surprise. It is a totally different matter to get hold of a phonographic cylinder, fit it to the instrument, and sit down to learn its contents. How often have the finest combinations in war or in politics been frustrated by the imprudence or treachery of a trusted subordinate who has contrived to get a sight of confidential despatches? With the phonograph, it is only needful that the sender should assure himself of his absolute isolation when dictating his despatch. It cannot be overheard while being repeated to the receiver. Now that languages are becoming more and more necessary parts of a soldier's education, a use can be found for the phonograph in that it will read aloud, and repeat as often as is necessary in season and out of season, the passages spoken into it by the most perfect masters of the language.

In conclusion, Colonel Fosbery stated the object of his lecture was to show that the Services need not despair of profiting largely by an invention which evidently has so great a future for those in every walk of civil life.—

United Service Gazette.

BODY ARMOR.

The following brief account of the coat of armor invented by Herr Dowe, tailor, Mannheim, is taken from the "Allgemeine Militar-Zeitung." His earlier experiments were conducted secretly, and it was not until shortly before Christmas last that he felt justified in requesting the commander of a grenadier regiment in Mannheim to submit his armor to trials with regulation weapons. The first experiments were encouraging, as although the bullets made holes in the material, they were flattened and fell behind the target. The outcome of these trials was the manufacture of an armor which is externally covered with the ordinary uniform cloth, and shields the breast and body of the soldier. The material is the secret of the inventor; it is elastic, easily attached to the uniform, hanging on the shoulder-strap buttons and being further fastened by buttons at the hips. Its weight is about 6 lbs. (German), and does not interfere with the movements of the wearer. The arms, legs and head are uncovered by it. According to the company commander of the 110th Regiment, who conducted the firing at 400, 300, and 200 m., the 7 mm. bullets did not penetrate the material. The inventor estimates the cost of each coat of armor at 14s.

According to the same journal, experiments were recently made at the Pressburg Cartridge Factory with the 8 mm. Mannlicher rifle against a bullet-proof material invented by Herr Syländer, and gave the most astonishing results. The material, which was found to be impenetrable at 50 m. distance, is only 10 mm. (.393 in.) thick. It was really invented some two years ago, but until Dowe's invention was published Herr Syländer did not contemplate employing it as a body armor. The material is of course, a secret, but it is known not to be either woolen, hemp, or wire; it is very light and the cost is a mere trifle. Herr Syländer, although satisfied as to the impenetrability of his material, is of opinion that neither it nor Dowe's armor can be usefully employed as a shield against bullets, as even if the armor is not penetrated the shock of the projectile will put the person hit *hors de combat*; at the same time, he believes that it can be of the greatest service in the form of a bullet-proof and easily transportable shield.—*Journal of the Royal United Service Institution.*

THE NEW KRUPP QUICK-FIRING FIELD-GUN.

A *Bericht* from the Essen works describes in much technical detail the new Krupp quick-firing field-gun, and gives many particulars concerning the trials which took place in the years 1891 and 1892. The gun in question has a calibre of 6 cm. (2.36"), and two types were experimented with, respectively 30 and 38 calibres in length. The tube generally resembles that of other Krupp guns, but there are some differences. The projectile and the powder-charge are cased together. We learn that the breech-mechanism works easily, and it is described as especially safe. The following are particulars of weight for the 30 and 38 calibre guns: tube, 474 lbs., 660 lbs.; carriage, 924 lbs., 1188 lbs.; unlimbered gun, 1417 lbs., 1869 lbs.; limber, 1110 lbs. limber in charge for 48 rounds, 1655 lbs., 1677 lbs.; gun fully equipped, 3067 lbs., 3540 lbs. The initial velocity of the two guns is respectively 1378 feet and 1640 feet, which can be increased, though at the cost of reducing the rapidity of fire. The extreme range for shrapnel-fire is about 3300 yards. Accuracy of aim is somewhat less than with the German heavy field-gun, but the difference is inconsiderable up to 3000 yards. But in view of the importance of the question, we give below the result of shrapnel-fire (four trials with shrapnels of 100 balls, and a fifth trial with shrapnels of 80 balls), the 6 cm. 30-calibre gun being employed, and the marks being three in number, 7' 9" high and 98' 6" long, placed severally 65 feet behind one another.

—	Distance. m.	Rounds.	Time. sec.	No. of Hits.		
				—	per round.	per minute.
1	1,000 (1,093 yds.)	10	52	I. Mark 561	56.1	648
				II. " 353	35.3	407
				III. " 224	22.4	258
				Total 1138	113.8	1313
2	1,570 (1,716 yds.)	10	64	I. Mark 352	35.2	330
				II. " 288	28.8	270
				III. " 225	22.5	210
				Total 865	86.5	810
3	2,000 (2,187 yds.)	10	80	I. Mark 225	22.5	168.8
				II. " 621	62.1	465.8
				III. " 349	34.9	261.8
				Total 1195	119.5	896.4
4	2,000 (2,187 yds.)	10	35	I. Mark 415	41.5	711.6
				II. " 382	38.2	655.2
				III. " 218	21.8	373.2
				Total 1015	101.5	1740
5	2,000 (2,187 yds.)	11	120	I. Mark 173	15.7	86.5
				II. " 279	25.4	139.5
				III. " 219	19.9	109.5
				Total 671	61	335.5

The gun gave the fullest satisfaction in regard to its stability and working, and it developed no defects.

The *Militär-Wochenblatt*, after commenting upon this *Bericht* in two very long articles, claims to have shown that these trials of Krupp 6 cm. field-pieces have in no wise shaken the argument which it has sustained, in discussing the "field-gun of the future," as to the doubtful value of small-calibre quick-firing guns. Nevertheless, it says, the facts adduced are an important contribution to the development of the looked-for gun, and are fruitful in lessons. Thus it appears that, without increasing the velocity of the 8 cm. shrapnel, or diminishing the powder-charge, the shrapnel may be made to carry more balls by the simple means of reducing the thickness of the case, as was done with the 6 cm. gun at Essen. Again, says our German contemporary, it appears necessary that the "field-gun of the future" shall be rifled, not solely with reference to accuracy of aim, but also to the working of shrapnel-fire. The division of the carriage into an upper and a lower part, which is a feature of the new arm intended to secure better sighting of the gun, certainly facilitates the aim, and thereby increases the rapidity of fire. But, without doubt, says the *Wochenblatt*, this advantage must be bought either by increasing the weight of the unlimbered gun, or by materially reducing the gun-power—weight of the projectile and velocity—and other trials are necessary to determine whether the gain is worth the sacrifice. "We might doubt, especially in regard to shrapnel-fire, with the difficulty of discovering the mark upon a modern battle-field, whether a strictly accurate sighting of the gun is either necessary or possible."—*Army and Navy Gazette*.

Reviews and Exchanges.

The Service of Security and Information.*

THIS volume ought to meet with a hearty welcome from all arms of the service. Heretofore the minor operations of war had to be studied, in this country, from books which gave the subject a decidedly foreign flavor, or so smothered it in technicalities and the professional jargon of the schools, that plain common sense people could hardly comprehend it. This, for our army, was a grave defect. The fact that, on a war footing, our army must consist chiefly of volunteers, ought to banish technicalities from all our text-books. We are pleased to see that the author of this work has succeeded in banishing the bulk of them. Still a few remain, and he is obliged to begin his book with two pages of definitions. We do not pretend to say that any of these could be dispensed with. They seem to be an indispensable part of the language of the profession. Yet why should "Crows-foot" figure in the list? Is it an indispensable requisite to the destruction of a ford? (p. 193) And how many instruments of the kind are to be found in the field outfit of any modern army? Moreover, what would the rural militiamen imagine it to be, after reading the definition?

In a few well-packed pages the author demonstrates the necessity for *Information and Security* to any body of troops in the presence of an enemy. He defines the nature of the information and the kind of security required, and points out how the one may be obtained and the other afforded. These methods constitute "*The Service of Security and Information*," which he has chosen as the title of the work. We like the title very much. It is brief, comprehensive and original—perhaps a little misleading, but altogether happy. And the title is not the only pleasing feature. "*The typographical dress of the volume*," which altogether disregards the fashion established for military books, is also an inspiration. It is a pleasure to read such a piece of typography. The plates are also excellent. Mr. Chapman of Washington has every reason to be proud of his part of the work.

Thirty-three pages of the book are devoted to Advance Guards, and the subject is treated in admirable text-book style. There is no surplusage and no ambiguity. The column of march is described and then the duties, strength, formation and disposition of the advance guard are taken up and discussed seriatim. The case for and against strong advance guards is fairly stated, and a rule deduced, which must necessarily have so many exceptions that it hardly deserves the name. We heartily agree with the author when he says, in effect, that after all, the judgment of the commander must decide. A text writer has done his whole duty in such cases, when he states clearly and concisely the advantages, disadvantages and absolute dangers of any tactical proposition. The decision should always rest with him who bears the responsibility.

In this connection we have a word to say about the duties of the commander of the

* *The Service of Security and Information*. By Capt. Arthur L. Wagner, 6th Infantry. James J. Chapman, Publisher, Washington, D. C.

Vanguard as prescribed by the author, or rather about No. 6 of those duties. No doubt nineteen men out of twenty would interpret that precept correctly. But for the sake of the twentieth man we should like to see it amended. The rule referred to provides for forwarding information, and the dangerous clause in it is, "*First testing its accuracy as far as possible*" (p. 15). That this is the honest opinion of the author is not to be questioned ; as the qualification is repeated with reference to outposts (p. 53). Now while the commander of the Vanguard holds a very important position, responsibility rests with the commander of the advance guard. What interpretation might be put upon the clause above quoted, would greatly depend upon the character of the interpreter. He might hold on to important information, for hours perhaps, thinking it *possible* that something might turn up that would show it to be untrue. And thus, judgment and possible action would be forcibly transferred from the commander to a subordinate. We think that every scrap of information obtained should be transmitted to the commander just as it is received, and as soon as possible, giving always the fountain whence it came. It is doubtful if any opinion as to its truth should accompany it. If faithfully reported, the commander should be able to judge of that. Intentional falsehood rarely deceives. On the contrary it frequently discloses the very fact it was concocted to conceal. It takes great ability to float a lie in an ocean of evidence. It has been done, notably in the campaign of Marengo. Napoleon's army was in great danger after crossing the Ticino. Melas was mad, and for a wonder started to do the right thing, which, for Napoleon, was decidedly the wrong thing. But while the right thing was in progress a rumor reached Melas that Moncey had arrived on the Ticino. Shortly afterwards the same rumor was received from another direction and Melas became alarmed and stopped the progress of the right thing. The rumor was a lie, but it must have been launched by a master mind. A bungler would have said Moreau instead of Moncey.

Now the scouts that picked up that piece of information dared not hold it for verification. It was too important. Yet if they had, it would have gone hard with Napoleon. But the verification, the judgment, should have been accomplished at headquarters. That it was not, was probably due to Melas's madness. He was not in a condition to judge anything. He had been outwitted by a stripling and he was foaming with rage, and in excellent condition to be outwitted again. Which he was.

We believe that the subordinate should have no discretion in this matter. What he sees and hears are always important. What he thinks, has little value. And, indeed, this is the author's opinion as given on page 122. Of course no officer would transmit arrant nonsense to his chief. Still his chief is in a better position to judge of its value than he is. So, we believe, the safest way is to transmit everything, rumors as well as facts. It is unsafe for a subordinate to exercise discretion in such matters.

In reading any old familiar story, no matter how well it is told, the attention will flag, and the reading will become merely mechanical, until some forcible sentence or fundamental fact arouses the reader again. There are many such awakeners in this volume, and they are the more startling because they are so different from the realities of military life as it is with us at present. One of these may be found on page 55. "Too many instructions and orders should be avoided." There is a whole chapter in these few words. Too many instructions and orders are the bane of the American army. Discretion has been rusting in some old lumber room ever since the Rebellion. Commanders no longer command ; they merely obey the instructions and orders of the head centre. What will happen when it becomes necessary for subordinate commanders to resume the functions of their office God only knows. They have forgotten how to do it. But the author is speaking of scouts and patrols. They also are overburdened with orders. And so are sentinels at ordinary military posts. Sentinels,

whether of camp or outpost, who have a string of orders to remember and the prospect of at least a reprimand if they forget them, are continually rehearsing them in their own minds, and vigilance suffers accordingly. All orders should be reduced to their lowest terms.

We are sorry to see that some of the old-time formalities connected with the reception of a flag of truce have been omitted. Thus we read: "When a flag of truce approaches the bearer is halted in front of the line of sentinels, and word is at once sent," etc. (p. 57) The old-time formality of making the bearer of the flag and his escort face outwards is omitted. Nor was it a mere formality, but a necessary precaution. Indeed the author must have had the necessity in mind when he penned the requirement that the sentinel shall not "allow him to reconnoitre" (57). How he is to prevent him is not stated.

There are many points in connection with the reception of a flag of truce, on which we cannot agree with the author. The requirement that "He will be sent (blind-folded) without delay to the commander of the outpost" (p. 60) is not in accordance with the customs of armies as we have learned them. On the contrary we believe he is, and ought to be, held between the lines, facing outwards, and under a special guard sent forward for the purpose from the picket, until the officer authorized to receive a flag arrives. The guard is intended not only to hold the flag, and see that the etiquette of war is duly observed, but to cover it from irresponsible fire and secure its safety at all hazard.

The recent American authorities on this point, which for convenience I copy from Captain Carpenter's paper on "The Flag of Truce" (MIL. SER. INST. JOURNAL, Vol. XIV, 540) are as follows:

Gen. Rosecrans.—"No person coming from the enemy with a flag of truce must, therefore, be permitted to advance further than the outposts or cavalry videttes."

Gen. Thomas.—"I do not believe in flags of truce, therefore do not permit or receive them."

Gen. Hooker.—"Flags of truce from the enemy will be met by the party designated in orders, and by those only."

Gen. Halleck.—"As flags of truce are frequently used to cover the operations of spies, they never should be permitted within our lines."

Gen. Grant.—"No flags of truce will be permitted to pass our outposts."

And for English authority the Duke of Wellington's orders on the subject constitute the keynote—"The bearers of flags of truce sent by the enemy will not pass the advance post where they present themselves."

There is no escaping the conviction, in spite of the ambiguity of some of the orders, that they all mean that the flag of truce should be halted outside the lines, and held there until it is met by the officer authorized to receive it.

Picket-firing is very properly condemned. Only inexperienced soldiers indulge in this barbarous practice, and we are glad to see it condemned in a book that will no doubt become the hand book of instruction for hundreds of thousands of inexperienced men.

We find some changes in the old established nomenclature of outposts. "The Cossack post" is a new name in our army, and as it does not appear in the definitions at the beginning of the work, it is only from the context that any one, unfamiliar with foreign nomenclature, can gather its meaning. But the Cossack Post is no stranger in our army. It grew out of the necessities of the situation during our Revolutionary War, as the author himself says in a foot-note (p. 69), and was known as "a group." We have never been happy in our nomenclature, and the Revolutionary name is very defective. Without the idea that it means "of sentinels," the expression is very in-

definite. But with that idea, as for instance, when speaking of the outposts being covered by a chain of single sentinels, or double sentinels, or small groups, it was expressive enough. We would not, however, defend the old nomenclature, and we only object to the new on account of its foreign flavor. It does seem unfortunate that a purely American invention, as old as the nation itself, should have to go to the steppes of Russia for a name.

Reconnaissance work must always be a hopeless undertaking to a great many men. It calls for qualifications which have not been evenly distributed among the human race, and to do it effectively without such qualifications is impossible. No doubt natural talents can, and ought to be cultivated, and the prescriptions of a text-book may be made useful in that direction ; but to set Tom, Dick and Harry to learn the business from a text-book is apt to prove, in perhaps a majority of cases, a waste of energy. To expect that every officer liable to patrol duty will be competent for anything in that line after he has committed the text-book to memory, is to lay the foundation for much disappointment. Take the duties of *Exploring Patrols* as given on page 96-98, for instance. Few fighting officers have the eye and hand, not to mention the talent, essential to success in that line. Some again have a natural talent that way, which will pay cultivation ; but to require all to reach a common standard of mediocrity, is simply to disgust both classes. Of course, in active service, topographical patrols are every-day occurrences ; but the tasks assigned are simple and special. What is there behind that wood ? Does that belt of timber extend to the river ? and the like. Data thus collected are hastily sketched on the military map by the staff officer who has such matters in charge ; but data for a new military map cannot be collected in that way.

The instructions prescribed for the sergeant of a small infantry patrol are excellent (p. 101). Still it may be doubted if the whistle should be resorted to in signalling while on patrol, except in dire emergencies when safety—escape—becomes the only order of the day.

The accurate estimation of numbers in a column of march is one of the hardest tasks which a patrol commander has to do. It is easy enough to estimate up to a battalion. Beyond that the estimates of even intelligent men will often be wide of the mark. It is well, therefore, that the judgment should be required to hold its peace in such cases, and that some method of measurement should be resorted to. The author's recommendations (p. 116) are very good ; but they will almost always yield an overestimate. Troops in column of march rarely take the regulation step, and to estimate the gait from a distance is about as difficult as to estimate the numbers. During the Rebellion a large column was generally measured by the number of flags it carried. Thus General Buford from his position somewhere on the Blue Ridge, saw and reported a column, consisting of 17 battalions, 1 battery and 500 cavalry passing through Gainesville at a certain hour on the morning of August 29. Now that dispatch contained a heap of information if it had been rightly read. They should have been able to tell at Headquarters, with approximate accuracy, not only the strength of the column, but what it was and who commanded it. They had the organization of every division in both armies, and should have been able to recognize the division observed. But they did not. They do not seem to have attempted it. As a matter of fact the dispatch was sent to the commander of that very division, but it fell into other hands, and the identity of the division observed by General Buford remains an official mystery.

The chapter on "The Cavalry Screen" is somewhat disappointing, as was to be expected. It is, indeed, no novelty. We resorted to it, on both sides, during the Rebellion, and the Germans in 1870-71 used it very effectively. But it has never been

written up. Its methods are difficult to grasp. They vary not only as between Europe and America, but between armies, and even from day to day. The cavalry screen is like a great fog bank rolling on before an army ; sometimes thick and impenetrable ; sometimes gauzy and deceiving and always uncertain. Theoretical rules for such a phenomenon must therefore be as unsatisfactory as detailed instructions for the navigation of a ship across the ocean. Apart from a few general principles men can learn very little about the management of the cavalry screen, until they begin to work at the business.

We are told (p. 162) that the duties of security and information conflict at certain stages of advancement, and the author seems to think that they ought to be separated. This is a good deal like saying that because the function of the huntsman are so different from those of his dog, they should be separated. Which would be a great mistake. The one is absolutely essential to the other's effectiveness. The first and greatest duty of the cavalry screen is to establish contact with the enemy, and in its efforts to perform that duty it performs information service. The patrols used for this purpose are the pointers or setters that hunt up the game, and every point and pose and wiggle of their tails is a service of information, and if they are not equal partners they are at least indispensable.

When an important duty has to be done "by the last man of the rear detachment" (p. 193) in the withdrawal of a rear guard across a bridge, when hotly pressed by the enemy, it is very apt not to be done. When that duty is to fire certain torpedoes or charges of explosives, which, presumably, have been scientifically placed by skillful hands where they will do the most good, it is certain to be neglected, or mismanaged. It is easy enough to say, "Let the last man blow up the bridge" ; but blowing up a bridge is a difficult operation, and should not be entrusted to unskilful hands. So also the destruction of a ford by crows-feet, broken bottles and the like (p. 193). Whence are they to obtain the material ?

The Appendix on Spies is very interesting ; but here again we find ourselves out of touch with the author. The management of spies cannot be learned. It demands a natural power of discernment which enables the possessor to read the inmost thoughts of another. All *good* spies possess this power in some degree. If their employer possess it in a greater degree they will be faithful. They are perfectly aware of his powers and do homage to them instinctively. But if their employer is a sham, operating only by rule, following a formula, they "size him up" in very short order and find amusement in playing with him as the charmer does with a poisonous snake. Why should we try to teach impossibilities ? If an officer has the requisite spiritual power he can manage spies without assistance or advice. If he has not he had better let the business alone.

Newspapers are very properly recognized as important agents in the service of information (p. 211). They present a problem in war, which, as yet, remains unsolved. The military censorship recommended by the author could hardly cure the evil—unless the correspondents were all treated as double-spies. Which would be manifestly unjust. Perhaps a bureau of information, several marches in rear of the army, from which correspondents should be compelled to get their information would be a step in the right direction. They should not be permitted to wander at will. If they were tied to the bureau it might be possible to utilize them for military purposes.

But we have reached our limits and must desist. Captain Wagner's book ought to have an extensive circulation. It meets a want which has long been felt and will find a broader field of usefulness in the national guards than it can hope to have in the regular army.

JAMES CHESTER, Captain 3d Artillery.

General Jackson.*

We have in this latest—and, unfortunately for the public, final work of Mr. Parton—not exactly an old friend with a new face, but rather a reduced photograph of the life-size portrait with which we have heretofore been familiar: the features and dress, the lights and shades are much the same, but as is the case with the photographic copying process, some parts have been thrown a little out of proportion to bring them all within the limits of the camera. In short, this new biography of General Jackson is, in the main, simply the three volume *Life* by the same author with which we have long been acquainted, the last edition of which was published, we believe, in 1870, with such parts eliminated or thrown into the background as were necessary to bring out prominently the military features of the subject's character and adapt the whole to the limits of the one volume series of which it now forms a part. The picture as thus presented has in general the same merits and defects as the one of which it is a copy. Of the former qualities, not the least, in the eyes of all those who have afforded and will in future afford material for the literary artist, is that which has characterized the works of Mr. Parton's *confrères* of the brush and palette—it presents the subject in the most flattering light. It is true he is not guilty of the unpardonable solecism in art of omitting any moral blemish in the character of his hero. But just as Vandyke might paint a wart upon a royal nose or the pock marks on the face of a court beauty so as to perhaps actually add to the attractiveness of the portrait, so the author, in the biography before us, touches the dark spots in Jackson's character with so deft a hand as to convert them into foils for what stands out as noble and attractive. Whether the art which is both pleasing and little reprehensible in the portraiture of faces intended to delight the eyes of those who are connected by the ties of blood and inherited affection with their predecessors of a long gone by generation, is justifiable in the historical painting of the literary artist, is a question that may safely be left to the literary student.

Notwithstanding the enthusiastic remarks in the preface, and the assertion "that Andrew Jackson, in point of native military capacity, was the peer of the great generals of the world—Cæsar, Cromwell, Frederick, Bonaparte, or Wellington," the thoughtful student will find it difficult to account for the place assigned him in the lives of "Great Commanders." His total service in the field covered a period of only twenty-three months. Five of these were devoted to the inglorious Seminole War and eight to the Creek campaign. The remainder was devoted to the operations at Mobile, Pensacola, and New Orleans. None of these operations, nor all combined, entitle Jackson to the reputation of a master of the art of war. We may admit, with the author, that his career during these twenty-three months indicated the possession of many of the indispensable qualities of a commanding general—indomitable courage, self-confidence, boldness and vigilance in just proportion, a clear perception of the importance of little things. The recognition of these facts makes the student and the patriot regret that Jackson could not have had an early command on the northern frontier. The campaign of 1812 might then not have been the record of imbecility and disaster which now disgraces our military annals. Advantage might have been taken of England's condition of surprise and lack of preparation in that quarter: the war might have been brought to a close within a year and that dream of enthusiastic patriots—the conquest of Canada—have been fully realized. We say "might," for though we cannot be certain as to how Jackson would have endured the test of operations upon a wider field, enough is seen to show that he had in a higher degree the elements essential for command than had any of his contemporaries upon that theatre. If there

**Great Commanders—General Jackson.* By James Parton. New York: D. Appleton and Company. 1893.

ever were conditions when fiery temper and supreme self-confidence ensured success, these conditions were there realized, and temper and confidence Jackson possessed in abundance.

We may, therefore, agree that Jackson came nearer than did any other commander in that unhappy war to deserving the title of a general of ability. He showed in a higher degree the qualities which compel success in war, but it may be doubted whether the purely military student will waste an hour in hunting for lessons of military instruction in the dreary records of extravagance and incompetency of that time. It may be supposed that the editor of the works now being given to the public assigned a place to Jackson because in a series of purely American Commanders it seemed unpatriotic to pass over in silence the War of 1812, and because, if not so passed over, Jackson's place was *facile princeps*.

The author condenses into less than fifty pages the greater part of the first volume of his earlier work which covered nearly forty-seven years of Jackson's life. Those who are disposed to make him the subject of hero worship will find in this little to regret. During those years Jackson exhibited few traits to imitate or admire. He appears as an uneducated youth and illiterate man, during part of that time given to a not moderate use of whiskey, gambling more or less, racing horses, fighting cocks; during all the time accepting or provoking duels and engaged in the study of profanity as a fine art, which finally with him attained such a degree of ornate development as made the swearing of "our army in Flanders" seem in comparison like the cooing of a sucking dove or the mild accents of a maiden's prayer.

During this period occurred his marriage with Mrs. Robards, the true facts in regard to which have doubtless been much obscured in the dust of political contention waged over it. Certain it is that by his thoughtless haste in the matter Jackson gave as little consideration to his wife's future reputation as was afterwards done by her most slanderous detractors.

A little later he took part in the organization of the State of Tennessee and became her first representative in the Federal Congress. Here he was one of the twelve who voted against the address to Washington at the close of the latter's administration; an act which has been justly characterized by another distinguished biographer of Jackson as the most factious and malicious which the opposition of that time had ever perpetrated.

At the end of one year's service as representative he was appointed Senator, an office which he held for only a few months. He resigned to accept the position of Judge of the Supreme Court of Tennessee. Nothing is known of his conduct during the six years of his judgeship, no records or decisions of the Court in which he took any part remaining. We have nothing of this period except some astonishingly illiterate letters which Mr. Parton has preserved.

The War of 1812 found him one of the two Major-Generals of Militia of his native State. His offer of services having been accepted he set out for New Orleans with a force of volunteers which, however, was ordered at Natchez to return home. A duel with Thomas Benton later in this same year—1813—left him with a wound from which he never recovered. While still suffering from its effects, occurred the first military opportunity of his life. Tecumseh had incited the war party of the Creek Indians to take the field and these by the capture of Fort Mimms and the massacre of its garrison had caused the almost total abandonment of Alabama by the whites. Jackson acting with troops of other Southern States and territories and entirely outside the zone of federal operations utterly crushed the Creek power in a campaign of seven months. This campaign was remarkable for its success in spite of the continued quarrels between commanding generals, the lack of concerted action, very

imperfect supplies and, as a natural result, the gross insubordination of the troops. To Jackson belongs all the credit for grasping success in the very face of disaster, for it was alone due to his energy, his resolution in the face of obstacles, and his severe measures for enforcing discipline. The result of this campaign to him personally was to make him a Major-General in the regular army, he receiving the vacancy made by the resignation of General Harrison. The Creek campaign opened the whole of the Indian country to the Gulf Coast, and for the first time brought this territory within the field of federal operations. Jackson was ordered to Mobile in August of 1814, where he established the headquarters of the Department of the South. He defeated the English in their attack on Mobile Point and then without orders from Washington moved with 3000 men against Pensacola, an act which was quite justified by the presence of English troops on Spanish territory. The town was carried by assault and the English withdrew after blowing up the fort at Barrancas.

The way was now clear for the movement to New Orleans. This had been rendered possible only by the opening of the Creek country and the successive occupation of Mobile and Pensacola. Were there anything to show that these operations formed part of a general plan, with the battle of New Orleans as the culmination, it would indeed demonstrate the genius of a born general. But there is nothing to show this. There is every reason for believing that so far as concerned any general, far-reaching plan, previously conceived in Jackson's mind, these three operations preceding the one at New Orleans, had only an accidental association. Jackson himself realized how much he owed to his good luck. Long years after, when his eyes were heavy with a premonition of the long sleep, some one quoted in his presence Shakespeare's words: "There is a tide in the affairs of men which, taken at the flood, leads on to fortune." "That's true, sir," said Jackson with emphasis, "I've proved it during my whole life."

But he deserves none the less, all the credit for knowing when to take the tide as he did in his movement upon New Orleans. Here with unwearied energy he worked upon the defenses of the city and finally completely defeated the English forces on the 8th of January, 1815, two weeks after the signing of the treaty of peace.

There are many who think that this battle was a useless effusion of blood and regret that there was no Atlantic cable to bring the news of the treaty which would have made it impossible,—but we cannot agree with them. The war had closed with an apparent almost total failure to accomplish the objects for which it had been waged. Not only was the great object of our ambition—the conquest of Canada—still unrealized, but our military incapacity had been such as to suggest to England a demand for the cession of a part of our own territory. This, of course, was not to be entertained for a moment, but the treaty of peace contained no provision in regard to the ostensible cause of the war,—the impressment of American seamen. There is little doubt that the treaty would not have been thus silent had our negotiators had the victory of New Orleans as a lever with which to work upon their colleagues' obstinacy. At any rate it doubtless exerted a powerful influence upon the subsequent course of English officials in this respect. It is as though a secret clause granting our contention had been introduced into the treaty, but written in invisible ink which required nothing less than the burning heat of Jackson's final victory to bring to light and give it full effect.

The subsequent career of Jackson as commander of the Southern Department, Governor of the newly-acquired Territory of Florida, United States Senator, and President, has nothing of interest to the military student. Of him, in these more or less purely civil capacities, the author takes a juster view and gives more impartial opinions of his acts, than he does in respect to Jackson the soldier. We cannot ac-

cept Mr. Parton's estimate of his mental and moral constitution as being that of a man "open to suggestion and argument." We think a more accurate view is Professor Sumner's judgment in his criticism of the proceedings in the Florida matter. On many critical occasions he was guided "by the current prejudices and assumptions, not by evidence and information. This was the tone of his mind. Notions and prepossessions which once effected a lodgment in his mind, because circumstances gave them a certain plausibility or because they fell in with some general prejudice or personal bias of his, immediately gained for him the character of obvious facts or self-evident truths. He then pursued such notions and prepossessions to their last consequences, and woe to any one who stood in his way."

But whatever be our estimate of the man in any of his varied capacities, it must be admitted that his character will endure the great test of suffering much to be taken from even a hostile view of it, without lessening the profound impression which his personality will make upon succeeding generations. Politicians, in the contests of faction, have degraded his name into a rallying war-cry on the one side, while on the other it is a term of hissing reproach; but the patriotic American soldier will contemplate his character unbiased by party influences and will attribute even his failings to that intense and burning love of country which eventually brings absolution for all political sin.

T. H. B.

England in Egypt.*

The object of this book is to give an account of the development of Egypt under British influence especially in the department of the Army, Finance, Public Works and Justice.

Its study has a general value irrespective of any possibility that we may get an Egypt of our own to look after out in the Pacific. If the Great Powers cannot yet divide the world among themselves they compromise upon a "Protectorate" which means the introduction to the sick man of several specialists instead of the family physician with a corresponding multiplicity of fees.

In the progress of civilization, so-called, ryot, fellah and coolie only get a change of masters. Their labor serves to fill a London with luxury rather than a Delhi but in these later days a streak of consideration does run through their treatment. They are enabled to live longer in order that they may do more.

Climate does not seem to make the man nor the nation. The Nile and the sand and the sun of Egypt are all there, the sphinx and the pyramid remain, but the successors of Hatasou and Rameses are water-carriers and dancing girls.

Into "the bundle of contradictions" known as Egypt, England has entered primarily, of course, for her own interests but these are fortunately bound up with the welfare of the country. The book before us chronicles the progress made in the ten years following the assault upon Tel-el-Kebir.

Interference had become necessary. "The European concession-hunter, the Jewish and Syrian money-lender, the land-grabber who could always with ease obtain the protection of some European Power had fattened on the Egyptian Treasury, and the poor Egyptian cultivator to an almost incredible extent." The national movement begun under Arabi, was about to pass into the natural extreme "of an attack not only upon everything European but upon everything Christian. The ever-smouldering hatred of Moslem for Copt had been stirred into flame and in another month the half million and upwards of native Christians of Egypt including many of its richest

**England in Egypt.* By Alfred Milner, Late Under-Secretary for Finance in Egypt. New York: Macmillan & Co. 1892.

and most intelligent inhabitants would have gone the way of their hated rivals the Syrians and have swelled the list of the proscribed."

So England imposed upon herself "the duty of giving advice" to his Highness the Khedive towards the establishment of a satisfactory order of things that should "possess the elements of stability and progress."

This advice took the concrete shape of a British army and various British officials scattered through the civil administration. In case of need they were "to make clear to the Egyptian ministers and Provincial governors that the policy of her Majesty's Government must be adopted and those Ministers and Governors who fail to comply with the requirements of that policy must cease to hold office."

But this state of things was not to be called a "Protectorate" in deference to foreign sensibilities and to early premature avowals by England as to her designs in Egypt.

It has met with a "large measure of success due to the practical instinct" with which Englishmen on the spot lay hold of the duty nearest them without looking to the right or left and work out for themselves "some sort of coherent and definite line of action amid the bewilderment of hot fits and cold fits at home, of alternate orders to advance and retreat, of some things rashly begun and others unwisely neglected."

The difficulties in the way, consisting of a most extraordinary complication of jurisdictions and responsibilities growing out of "capitulations" in the interest of foreigners, of Boards of Control in the interest of bondholders and generally of the huge "international top-hamper which Egypt has to carry and bear with such patience as may be," are dwelt upon at length and leave upon the reader the impression that the sons of Japhet in search of gain have gone down into modern Egypt eager to appropriate anything from an obelisk to consequential damages compared with which the Alabama claims were a mere nibble. "'Please shut that window,' Ismail Pasha is related to have said to one of his attendants during an interview with some European *concessionnaire*, 'for if this gentleman catches cold it will cost me £10,000.'"

The chapter on the Egyptian soldier is full of interest. In 1884 under Gen. Baker three thousand five hundred of them, threatened by a small force of the enemy, "threw down their arms and ran allowing themselves to be killed without the slightest resistance."

In 1891 the attack of the same enemy, "being pushed home with his usual intrepidity and fearlessness, the Egyptian troops stood their ground and did not yield an inch." "Why does the old army stand in history almost unequalled for cowardice and incapacity—why has the new, composed of very much the same element, so soon achieved an honorable record?"

Because poor officers, ill usage, little pay and that often intercepted, filthy barracks and neglect of the sick, plentiful use of the lash and no furlough privileges, made the peasant a coward; while discipline, strict but never abused, prompt payment and thorough provision for the welfare of the soldier, made the same peasant a man. Yet the British element introduced was small, being at the most 76 commissioned and 40 non-commissioned officers to 12,000 men.

But under their management the "soldiers had actually to be prevented from practising their drill in leisure hours. Not only would a non-commissioned officer (native) get hold of a squad on his own account whenever an opportunity offered, but it was a common sight to come across a private drilling three or four of his comrades."

"A very great impression was likewise made by the fact that the conscripts were now not only entitled to leave but regularly allowed to take it. The reappearance of the soldier in his native village, after an absence of a year in barracks, not crawling back mutilated or smitten by some fatal disease, but simply walking in as a visitor and with some money in his pocket was like the vision of a man risen from the dead."

Enough has been given to show that the reader, if he lays down this book, is in no danger of forgetting it. The remaining chapters, which must be briefly passed over, retain their attraction even when dealing with rather arid topics. That on Finance is a presentation of work done and order secured most creditable to the skill, honesty and devotion of the British Control.

Here is a condition of things easily recognized as not peculiar to Egypt, even in the days of the Pashas. "As long as the files were of adequate dimensions, as long as references were made in the proper quarters, orders given and received by the right people and all the official formalities properly observed, the minister (native) was happy." He was in the paradise of Officialdom, which is to have regular, *but not too strenuous*, employment, that is, the appearance of doing something and of being somebody.

The chapter on Public Works connected with what is the life of Egypt, the irrigation and reclamation of the Nile valley, canals both of drainage and supply, the great dam thrown across the east and west branches of the river just below its division at the delta, is another commendable record of efficient engineering, looking also to future extensions, by which not only a much larger area of tillable land is secured but also irrigation at any stage of water, thus providing for more frequent crops.

The book makes it sufficiently evident that to Egypt the guidance of Great Britain has been essential in the advance already made and will be essential in any yet to be attempted, mainly because "it needed that incarnation of compromise, the average Briton, to accept the system with all its faults and set to work quietly in his sensible, plodding way to do the best he could under untoward circumstances.

"The logical Frenchman would have been maddened by its absurdities. The authoritative temper of the German would have revolted at its restrictions."

And we fully agree with the author that it will be time enough to let Egypt walk alone when the European powers consent to abolish "the capitulations and other international fetters upon Egyptian freedom. For clearly it is impossible to say at one moment that Egypt is competent to take rank among autonomous states and to say at the next moment that she is not competent to punish a foreign pickpocket."

Anybody can govern with a bayonet, almost any one can draw out schemes and codes with a big inkstand and a box of pens, but it does demand practical ability of a very superior sort to make the most fruitful use of "untoward circumstances" and successfully meet sudden difficulties as they rise.

And that is just what the Englishman, to say nothing of his American cousin, has a knack of doing, visibly enough at any time since Alfred the Great.

H. W. C.

Cavalry Outpost Duties.*

Major Carr deserves the thanks of his comrades of the cavalry for the service he has rendered in the translation of this unique and charming manual. Written more than sixty years ago, it still retains much of its original value because the strong intelligence of the author enabled him to found his treatise upon unchangeable principles. The soldierly characteristics of the writer are reproduced in his vigorous and unpretentious style, and as we turn the pages of the book we seem to breathe again the atmosphere of the camp and field, to hear the rattle of the carbines, the trumpet signals, and the shouts of victory that follow the successful charge.

The author, a veteran cavalry officer of eight campaigns under Napoleon, who sheathed his sword after the disaster of Waterloo, was, in 1831, when war seemed imminent, appointed to the colonelcy of a cavalry regiment, and for the instruction

* *Cavalry Outpost Duties*. By F. De Brack. Translated from the third French edition of 1863, by Major Camillo C. C. Carr, Eighth Cavalry, U. S. Army. John Wiley & Sons, New York, 1893.

of his officers and men prepared this manual, founded in great part upon his own experience. So complete is this little work in all its details that, as stated by the translator, it might properly be called, "The Art of War in Miniature for Cavalry."

The following subjects, taken at random from the table of contents, will to some extent indicate the scope of the volume: clothing and equipment; shoeing; discipline; the study of the terrain; drawing and topography; bivouacs; grand guards and pickets; detachments; reconnaissances; charges; courage and cowardice; *morale*; surprises and ambuscades; flags of truce; the support of artillery; rear guards; cantonments. These and many other subjects are treated in a terse and vigorous style that commands interest and attention. Often the details of the instruction given appear, at first glance, to have but slight application to the changed conditions of to-day, but the intelligent student will find no difficulty in applying the principles that are so clearly outlined.

In the chapter on clothing and equipment we find the aphorism "*in war only the useful and durable are elegant*," which can never lose its force.

The instructions for aiming and firing (page 37), although much amplified in our latest firing regulations are hardly improved upon.

The chapter on discipline is most admirable, and deserving of the closest study of every officer who expects to command men under fire.

The subject of bivouacs is introduced by the statement that "the whole mechanics of war is limited to two things—fighting and sleeping—expending and repairing one's strength." No soldier who has passed through an active campaign will fail to recognize this truth, yet what theorist is there who considers the science of resting troops in the presence of the enemy worthy of any serious attention?

The subjects of reconnaissances and reports receive the attention that their importance demands, the text being illustrated by plates and diagrams.

Some 30 pages of the book are devoted to the use of cavalry on the battle-field. Many of the tactical changes there suggested have since been adopted, but any future board that may be appointed for the revision of our present drill book cannot fail to profit by a careful study of this portion of the work. Cavalry officers who remember that in the campaigns of the Civil War only the very simplest movements were ever used, and that in the deployments the drill book commands were usually ignored, will observe that their methods were in accordance with the teachings of this experienced cavalry officer, who dwells upon the necessity of avoiding all complicated movements in the presence of the enemy.

The remarks upon *morale*, and the importance of preserving a lofty *esprit de corps*, will perhaps cause some thoughtful officers to wonder what ultimate effect will follow recent legislation, the direct tendency of which is to discourage the existence of any such sentimental ideas in our army. A doubt may even arise in the minds of some of our zealous reformers as to the entire wisdom of the regulation that sends the colors back to a place of safety when the regiment takes the field.

On page 268, under the heading of escorts and convoys we find the following: "In the old army there was a marvellous profusion of light cavalry. I have seen almost entire regiments detailed as servants for general and staff officers, as escorts for private wagons, carriages, sutlers' wagons, etc. A certain general of a cavalry division took for his personal escort a picked squadron, in spite of the Emperor's positive orders, whose men formed not only his escort of honor but in addition were employed as servants for all the officers and employés at headquarters." From which it may be seen that the abuses which destroyed the usefulness of our regular cavalry in the early days of the Civil War were not peculiar to our army.

The space allotted us will not admit of any extended review of this work, and no attempt has been made to do more than to give some slight indication of its character. If we may judge from the smoothness and vigor of the style the work of the translator has been well performed. The book is excellently bound in flexible leather covers, but with all its admirable qualities it is to be regretted that it is marred by some errors of proof-reading, and that it is without an index.

In parting with this little volume the thought will occur, of what inestimable value to our cavalry of to-day would be a work of this character by one of our distinguished cavalry generals of the Rebellion period; and the question: Why has it not been written? remains unanswered.

The translator in his preface expresses the belief that we are indebted to some one for impressing upon our cavalry of the Civil War the true cavalry principles which were the foundation of its efficiency. Can it be believed that those five superb regiments that composed the cavalry force of the "old army" failed to stamp their indelible characteristics upon the force of which they became the nucleus, or that our debt of gratitude is not due to such cavalry officers as Sumner, Harney, Cooke, Sedgwick, Buford, and their pupils and followers, Stanley, Stoneman, Gregg, Bayard and Merritt?

M. H.

Berdan's U. S. Sharpshooters.*

The above is the title of a handsome, well-printed octavo volume, published at St. Paul, Minn. By a perusal of this work the mental vision is carried back through the dim aisles of the shadowy past to the historic fields of 1861-65. It is hardly necessary, however, for the veterans who formed the fighting portion of the Army of the Potomac to read any book in order to know what Berdan's Sharpshooters did during the War of the Rebellion. The crack of their rifles well to the front even now ring in our ears, and many a Southern squirrel hunter was made to feel that they had foemen worthy of their steel when Berdan's men felt their way to an engagement.

That the Confederate Army possessed better marksmen than the Union Army at the outbreak of the Rebellion there can be no doubt, for almost every man in the former was a hunter with the rifle, while on the other hand our eastern armies were composed mainly of laboring or professional men, who knew but little of rifle-firing. Even the regular army was sadly deficient in this most necessary qualification for a soldier. Therefore, when the First U. S. Sharpshooters was organized and furnished with proper arms it was a godsend, for it was composed of the flower of riflemen from many of the Northern States. Poorly armed at first, it was sent to Washington City, where but little faith was had by the authorities in their sharpshooting abilities; but Col. Berdan relates an amusing incident which somewhat assisted the regiment in obtaining the arms desired. The historian says:

"On one occasion the President, with General McClellan, paid a visit to the camp, and were invited by Col. Berdan to the rifle-range where the shooting was going on. To show what the men could do in rifle-pits, a target, representing two Zouaves, painted on canvas, was placed at a distance of 600 yards. One hundred men, with their heavy target rifles, were placed in a pit, where each fired one shot. When the target was brought in, it was found that every shot had struck within the outline of the two figures. President Lincoln fired three shots from a globe-rifle, while Gen. McClellan and some others tried their skill with more or less success. Abraham Lincoln handled the rifle like a veteran marksman, in a highly successful manner, to the

* *Berdan's U. S. Sharpshooters.* By Captain C. A. Stephens. Printed by the Price-McGill Co., St. Paul, Minn.

great delight of the many soldiers and civilians surrounding. Once, resting his gun on what he called a sapling, he said 'Boys, this reminds me of old-time shooting,' when they waved their hats and cheered him. His visit aroused their slumbering patriotism.

"After which, Col. Berdan, being called on, proceeded to execute some difficult shots. Then occurred one of those extraordinary accidents from which great and beneficial results often follow. Col. Berdan said: 'Thomas Scott, the Assistant Secretary of War, thought to gain a point by attacking me [Berdan] personally, and asked me what I knew about guns and war that I should set up my opinion against all these officials, and ended by challenging me to fire, thinking doubtless, I would decline; or if I accepted, to get the laugh on me by making a bad shot. I at once accepted, and ordered the men to bring out a target; the only one left was the figure of a single man, full size, with the words 'Jeff Davis' painted above his head. I remarked that I did not think it was exactly the thing to fire at Jeff Davis in the presence of the President of the United States. Mr. Lincoln laughed heartily and replied:

"'Oh, Colonel, if you make a good shot, it will serve him right.'

"The target was set up and I called for the sergeant-major's rifle, which I knew to be correctly sighted for this distance. Thomas Scott then remarked.

"'Now you must fire standing, for officers should not dirty their uniforms by getting into rifle-pits.'

"I replied: 'You are right, Colonel Scott, I always fire from the shoulder.'

"I stepped forward and began to bring the gun to my face, when he said:

"'What point are you going to fire at?'

"'The head,' I replied.

"'Fire at the right eye,' he shouted. I was then taking aim and made no reply, and it is hardly necessary for me to say that at that distance—600 yards—I did not aim at the eye, but I did fire at the head. The target was brought in, and as good luck would have it, I had cut out the pupil of the right eye. No man knew better than President Lincoln how to turn what he knew to be an accident to good account. He began to laugh and kept on laughing until he got into his carriage, and then said:

"'Colonel, come down to-morrow, and I will give you the order for the breech-loaders.'

The thought of the organization emanated from Hiram Berdan, of New York, and the regiment was composed of companies of picked men from the loyal States; the purpose being to bring together the best marksmen possible of the North and arm them with the most reliable rifle. The terms of admission to its ranks were that "no man be accepted who cannot, at 200 yards, put 10 consecutive shots in a target, the average distance not to exceed five inches from the centre of the bull's eye."

New York, New Hampshire, Vermont, Michigan and Wisconsin have the honor of furnishing the men for the First Regiment; while Maine, Vermont, New Hampshire, Pennsylvania, Michigan and Minnesota have to their credit the laurels won by the Second.

The First Regiment was officered and formed as follows: Colonel, Hiram Berdan, of New York; Lieut.-Colonel, Wm. T. W. Ripley, of Vermont; Major, Casper Trepp, of New York; Adjutant, F. A. Willett, of Michigan; Quartermaster, W. H. B. Beebe, of New York; Chaplain, Rev. G. S. Coit, of Connecticut; Surgeon, Dr. Guy C. Marshall, of New York. The companies were formed as follows: Company A, Captain Casper Trepp, from New York; B, Captain Stephen Martin, from New York; C, Captain Benjamin Duesler, from Michigan; D, Captain Geo. S. Tucker-man, from New York; E, Captain Amos B. Jones, from New Hampshire; F, Captain Edmund Weston, from Vermont; G, Captain Edward Drew, from Wisconsin; H,

Captain George G. Hastings, from New York; I, Captain A. M. Willett, from Michigan; K, Captain S. J. Mather, from Michigan.

The authority to raise the First Regiment was given on the 30th of July, 1861, and on the 24th of September following it left its rendezvous for Washington City. Four days afterwards Colonel Berdan was authorized "to muster and organize into companies all the men he could raise during the next 90 days." Under this authority the Second Regiment was formed. This was commanded by Colonel Henry A. V. Post, the companies being formed as follows: A, Captain Francis Peteler, from Minnesota; B, Captain Andrew B. Stuart, from Michigan; C, Captain John W. Dewey, from Pennsylvania; D, Captain James D. Fessenden, from Maine; E, Captain Homer R. Stoughton, from Vermont; F, Captain Henry M. Caldwell, from New Hampshire; G, Captain Wm. D. McPherson, from New Hampshire; H, Captain Gilbert Hart, from Vermont.

The First Regiment was assigned to Porter's division while in the defenses of Washington, and subsequently became a part of the 5th Army Corps, participating in the entire campaign of the Peninsula, companies of the regiment however, being detached to serve with other corps at various times.

The Second Regiment was assigned to King's division of McDowell's Corps, and with it participated in the operations of that corps and subsequently those of the Army of Virginia, under General Pope. Thereafter the two regiments served with the Army of the Potomac; and, barring the details, the History of Berdan's sharpshooters might well be taken as a history of the general movements and engagements of that army, from the siege of Yorktown, through bog and swamp, o'er plain and mountain, wherever there was fighting to be done, to the surrender of the Confederate Army at Appomattox Court-House. The work recounts incidents which will bring a smile to every face, and will afford delight to the youth of the country who take pleasure in reading of deeds of heroism; while to the relatives and friends of the members of the organization it furnishes an imperishable record of the dangers and hardships experienced by those who fought to preserve the good old Republic from disruption.

Historical Register.*

This publication more nearly approaches a Register of the Army of the Revolution than does anything heretofore printed. It is far from being complete, and it is by no means accurate. Indeed, the compiler frankly admits this much, and shows that completeness and accuracy in a work of this character are, under the existing conditions, quite beyond attainment by a single individual. Nevertheless, it is a valuable work to a student of the American Revolution, as a list of its contents shows; for it embraces: 1st. a list of the general officers of the Continental army arranged according to rank, with the period of service of each; 2d. an alphabetical list of the military secretaries and aides-de-camp to General Washington, with their respective periods of service; 3d. a roster of the field officers of the regiments of the Continental line; 4th. an alphabetical list of the officers of the Continental army, including some officers of militia, reporting the grades they held, their periods of service, when and where killed, or wounded, taken prisoner, exchanged, etc., and all cases in which thanks, swords, or other honors were conferred by Congress, and in many cases the date of death after leaving the service; 5th. a notice of the last surviving soldiers of the Revolution; 6th. the proclamation of Congress discharging the army; 7th. the statement communicated to the House

**Historical Register of the officers of the Continental Army during the War of the Revolution, April, 1775, to December, 1783.* By F. B. Heitman, Washington, D. C., 1893. 8vo, pp. 533.

of Representatives by the Secretary of War, January 10, 1827, showing the names and rank of the officers of the Revolutionary War; 8th. a list of French officers who served with the American army; 9th. chronological and alphabetical lists of battles, actions, etc.; 10th. a calendar for the years of the war, and 11th. a statement showing the number of troops furnished during the war by the several States.

The compilation of all that is here presented was a stupendous undertaking, and occupied much of the compiler's time for about ten years. He seems to have enjoyed during his labors facilities not vouchsafed to all who seek them, and he deserves congratulations in that he has put them to good use.

If we were permitted to examine the records of the Revolution now so jealously guarded in the Department of State in Washington, it would be possible to make a more satisfactory register of the Continental army, and a complete history of its personnel and its services. All this may be in reserve for future generations. When Mr. Bayard was Secretary of State, he submitted to the President a plan for the publication of the historical manuscripts stored in his department, and the President commended the plan to the favorable consideration of Congress. The papers were referred to the Committee on the Library, where they now enjoy that kind of sleep recommended by the Lady of the Lake for a retired soldier. The proposed publication met with the enthusiastic approval of the historical writers and students to whom the expense was submitted.

General Wilkinson relates in his memoirs that when he called on General Washington at Morristown to obtain permission to resign the lieutenant-colonelcy of Hartley's regiment and accept the appointment of brigade-major for service with General Gates, the Chief said: "*I would to God, gentlemen could for once know their own minds; I have been endeavoring to form a register of the army, but meet with so many caprices that I fear it will be impossible.*" If that register was ever formed, it is probably with the Washington papers in the Department of State, and a study of it would do much towards solving puzzling questions that now exist. In the absence of such aids to a minute study of that fascinating period of the nation's history, Heitman's *Register of the Continental Army* will be of vast assistance to the military-historical student of the subjects of which it treats.

R. H. H.

Admiral Farragut.*

In "Admiral Farragut," Captain Mahan has given us a most entertaining account of the life of America's most celebrated naval hero. The descriptions of the battle between the *Essex* and *Phœbe* in Valparaiso Bay, in which Farragut took part as a midshipman when less than thirteen years of age, and of the battle of Mobile Bay are especially vivid.

No better hand than that of Captain Mahan could have been found to write upon the achievements of Farragut—the last of the old-school commanders.

A remarkable feature in Farragut's career is that it had been a long preparation for the brilliant actions which he accomplished at the age of sixty-one, a period of life when most naval commanders have already completed their active labors.

Entering the navy before he was ten years old, as a mere boy he displayed intense eagerness to learn; he was a restless observer, and, until the end of his active service, he never lost the habit of recording the situation in regard to attack and defense, of the harbors he visited. Hobart Pasha, a British officer in the Turkish Navy and an

* *Great Commanders—Admiral Farragut.* By Captain A. T. Mahan, U. S. Navy. New York: D. Appleton and Company.

accomplished seaman, wrote: "Admiral Farragut, with whom I had many conversations, was one of the most intelligent naval officers of my acquaintance."

If he had never forced the passage of the Mississippi nor dashed into Mobile Bay across the torpedo line, he would have been reckoned by his contemporaries a very remarkable man.

"The personal character of Admiral Farragut afforded the firm foundation upon which alone a great military character can be built; for while no toleration should be shown to the absurd belief that military eminence leaps fully grown into the arena, it is true that it can be developed only upon great natural aptitudes. The distinction conveyed by a phrase of Jomini, applied to Carnot, the great war minister of the French Revolution, is one that it is well for military and naval officers to bear constantly in mind. 'Carnot,' he says, 'although a soldier by profession, was rather a man with a natural genius for war than an accomplished officer.' The acquirements of the accomplished officer may enable him to see the right thing to be done under given conditions, and yet fail to lift him to the height of due performance. It is in the strength of purpose, in the power of rapid decision, of strenuous endurance through a period of danger or of responsibility, when the terrifying alternations of war are vibrating in the balance, that the power of a great captain mainly lies. It is in the courage to apply knowledge under conditions of exceptional danger, not merely to see the true direction for effort to take, but to dare to follow it, accepting all the risks and all the chances inseparable from war, facing all that defeat means in order thereby to secure victory if it may be had." It was upon these inborn moral qualities that reposed the conduct which led Farragut to fame. He had a clear eye for the true key of a military situation, a quick and accurate perception of the right thing to do at a critical moment, a firm grip upon the leading principles of war; but he might have had all these and yet miserably failed. He was a man of most determined will and character, ready to tread down or fight through any obstacle which stood in the path he saw fit to follow.

"One of the greatest naval commanders whose experience of men extended through an unusually long and varied career—Earl St. Vincent—has declared that the true test of a man's courage is his power to bear responsibility; and Farragut's fearlessness of responsibility in order to accomplish necessary ends, while yet captain of a single ship, was the subject of admiring comments among his subordinates, who are not usually prone to recognize that quality in their commanders."

A statement of his own regarding this matter is full of significance, and militates strongly against the present slow acting methods of promotion in the line of our army: "I consider it a great advantage to obtain command young, having observed as a general rule, that persons who come into authority late in life shrink from responsibility and often break down under its weight."

What appears to us the finest feature in the life of Farragut is the extraordinary manner in which he repeatedly appeared to transcend his means and his opportunities. He is no mere wielder of a lifeless instrument. It seems informed with his own vitality. We see him, despite the weighty advice of his captains, forcing the passage of the Mississippi beneath the terrible fire of the forts, and notwithstanding the accidents of the shore, the fire-raft, and the attack of hostile rams, rallying thirteen out of seventeen ships above the forts, and compelling the fall of New Orleans, thus fulfilling what many had regarded as a Utopian dream. The same moral force and courage were displayed when his ship was nearly thrown on shore beneath the guns of Port Hudson, and when at the critical period of the campaign of 1863, he resolved, without orders, to take his fleet up the river beyond. It shone forth with more startling character, at the supreme moment in Mobile Bay.

The book is written in the limpid style and with the logical method and historical accuracy which have made "The Influence of Sea Power upon History" such pleasant and profitable reading.

The lessons to be drawn from Farragut's life apply as well to the army officer as to his brother of the navy and the book will be found equally interesting to both.

E. M. L.

Alternating Currents of Electricity.*

The rapid development of alternating currents and the great part they are destined to play in the transmission of power have caused an increased interest in the subject, but unfortunately it has heretofore been presented in such a manner as to be beyond the reach of the great body of readers.

In the present work the principles are developed in a simple manner that can be followed by any reader, and the various applications are sketched in a broad and instructive way that clears away the many mysteries with which they are supposed to be surrounded. The few mathematical formulæ in the book are confined to appendices.

The first four chapters are devoted to explaining alternating currents and their measurements and the three succeeding ones are on the principles and design of alternating current machines and transformers. Chapter VIII is on alternating central stations, and Chapter IX on the parallel coupling of alternators.

The remaining chapters are particularly valuable and treat of various forms of alternating motors, especial attention being paid to the explanation and discussion of multiphase motors. This difficult subject is treated so clearly that the reader is enabled to form as clear an idea of these new forms as of the simpler continuous current machines.

The treatment throughout is thoroughly practical, and the data and discussion on the design and construction of apparatus will be found invaluable to the electrician and designer. To the student and the general public this work will be a particular boon, bringing within their grasp a subject of the greatest importance and interest.

The Travellers' Ready Reference Guide.

The question of "Where are you going this summer?" for many people is answered by "Chicago," but it is not to be expected that the summer resorts will be entirely deserted, and the problem of how to reach the desired place—or how to get hold of some information about it, is one which confronts many people. These questions are best answered by consulting a reliable railroad guide such as the Travellers R. R. Guide (formerly Appleton's), which is published by the Knickerbocker Guide Company of New York. This Guide gives all the new time-tables of the World's Fair trains, but it also has a descriptive tourists' guide telling how to reach the various summer resorts and giving the name of the books issued by the transportation companies in which each resort is described.

It costs a quarter, and is sold by all the leading newsdealers, or will be mailed upon receipt of the price by the Knickerbocker Guide Company, of 24 Park Place, New York.

**Alternating Currents of Electricity: Their Generation, Measurement, Distribution and Application.* By Gisbert Kapp, C. E. With an introduction by Wm. Stanley, Jr. 1893. The W. J. Johnston Co., Ltd. 41 Park Row, New York City. Price \$1.00.

Extended Order Drill.

The Extended Order Drill is a new and valuable work on the new drill regulations which have lately been adopted by the War Department for use in the Army of the United States. This work is by Lieutenant John T. French, Jr., Fourth U. S. Artillery, who was the recorder of the Tactical Board convened by the Secretary of War to compose new sets of drill regulations. Lieutenant French in this new work throws light on and makes clear many passages which could not be elaborated on in the edition of the Drill Regulations for want of space. The book will be found valuable to every officer or non-commissioned officer of Infantry.

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Prize Essay—1893.

I.—The following Resolution of Council is published for the information of all concerned:

Resolved, That a Prize of a Gold Medal of suitable value, together with a Certificate of Life Membership, be offered annually by THE MILITARY SERVICE INSTITUTION OF THE UNITED STATES for the best essay on a military topic of current interest; the subject to be selected by the Executive Council and the Prize awarded under the following conditions:

1. Competition to be open to all persons eligible to membership.*
2. Each competitor shall send three copies of his Essay in a sealed envelope to the Secretary on or before September 1, 1893. The Essay must be strictly anonymous, but the author shall adopt some *nom de plume* and sign the same to the Essay, followed by a figure corresponding with the number of pages of MS.; a sealed envelope bearing the *nom de plume* on the outside, and enclosing full name and address, should accompany the Essay. This envelope to be opened in the presence of the Council after the decision of the Board of Award has been received.
3. The prize shall be awarded upon the recommendation of a Board consisting of three suitable persons chosen by the Executive Council, who will be requested to designate the *Essay deemed worthy of the prize*; and also in their order of merit those deserving of honorable mention.
4. The successful Essay shall be published in the Journal of the Institution, and the Essays deemed worthy of honorable mention shall be read before the Institution, or published, at the discretion of the Council.
5. Essays must not exceed twenty thousand words, or fifty pages of the size and style of the JOURNAL (exclusive of tables).

II.—The Subject selected by the Council at a meeting held Nov. 11, 1892, for the Prize Essay of 1893, is

“THE NICARAGUA CANAL IN ITS MILITARY ASPECTS.”

III.—The gentlemen chosen by the Council to constitute the Board of Awards for the year 1893 are:—

- BRIGADIER-GENERAL THOMAS H. RUGER, U. S. A.,
- BREVET-COL. A. C. M. PENNINGTON, U. S. A.,
- CAPTAIN G. W. DAVIS, 14TH U. S. INFANTRY.

WM. L. HASKIN,

Secretary.

GOVERNOR'S ISLAND,

January 1, 1893.

*“ All officers of the Army and Professors at the Military Academy shall be entitled to membership, *without ballot*, upon payment of the entrance fee. Ex-officers of the Regular Army of good standing and honorable record shall be eligible to full membership of the Institution by *ballot* of the Executive Council.

“ Officers of the United States Navy or Marine Corps shall be entitled to membership of the institution *without ballot*, upon payment of the entrance fee, but shall not be entitled to vote, nor be eligible to office.

“ All persons not mentioned in the preceding sections, of honorable record and good standing, shall be eligible to Associate Membership by a *confirmative vote* of two-thirds of the members of the Executive Council present at any meeting. Associate Members shall be entitled to all the benefits of the Institution, including a share in its public discussions, but no Associate Member shall be entitled to vote or be eligible to office.”

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NOTE.—Checks, Money Orders, or Registered Letters should be drawn to order of, or addressed to, "The Military Service Institution," Governor's Island, New York Harbor. Changes of address should be reported promptly.

THE SECOND REGIMENT OF ARTILLERY.

BY LIEUT. W. A. SIMPSON, ADJUTANT 2D U. S. ARTILLERY.

THE Second Artillery was, with the First, Third, and Fourth, organized by an Act of Congress dated March 21, 1821. Each regiment was to have one colonel, one lieutenant-colonel, one major, one supernumerary captain (for ordnance duty), one adjutant, one sergeant-major, and nine companies. Each company was to have a captain, two first lieutenants, two second lieutenants, and fifty-seven enlisted men. One company was to be designated and equipped as light artillery, but for many years it was such only in name. The list of organizations (given in the Army Register) from which these regiments were formed is misleading, as some of the organizations mentioned had been out of existence for years. The four regiments were formed from the Corps of Artillery, the Regiment of Light Artillery, and the Ordnance, the Second being taken mainly from the Corps of Artillery. All ordnance duty was to be done by the artillery. There was a second regiment of artillery during the War of 1812, of which Winfield Scott was lieutenant-colonel and then colonel. After the war it was merged into the Corps of Artillery. The names of battles of that war are borne on the regimental colors to-day, a few of the officers of the new Second had belonged to the old, and some of the companies may have belonged to both regiments, a fact I am unable to establish; but as a whole the Second Artillery of 1812 was a different organization from the Second Artillery of 1821.

The assignment of companies, stations, and former organizations is given in the following table:

Company.	Captain.	Former Organization.	Station.
Headquarters.			
" A "	Fanning.	2 B. N. D.*	Ft. McHenry, Md.
" B "	Gates.	1 B. N. D.	West Point, N. Y.
" C "	Roach.	3 B. N. D.	Watervliet Arsenal.
" D "	Heileman.	1 B. N. D.	Ft. Mifflin, Pa.
" E "	Nourse.	Made up of recruits.	Ft. Niagara, N. Y.
" F "	Belton.	3 B. N. D.	Pittsburg Arsenal.
" G "	Zantzinger.	4 B. N. D.	Ft. McHenry, Md.
" H "	Mountfort.	4 B. N. D.	Plattsburg, N. Y.
" I "	Legate.	1 B. N. D.	Detroit, Mich.
			Mackinac, Mich.

* B. N. D. stands for Battalion, Northern Division.

The new field officers were: N. Towson, colonel; James House, lieutenant-colonel; J. Hindman, major. Colonel Towson had distinguished himself greatly, while a captain of the Second Artillery, in the War of 1812. At the time of his nomination to be colonel, however, he was paymaster-general, then a civil officer. The senate refused to confirm him as colonel

on the ground that selections of officers for the new regiments should be confined to the army. The disagreement between the executive and the senate in this case lasted through three administrations, and was finally settled in 1832 by the nomination and confirmation of the then senior lieutenant-colonel of artillery, William Lindsay. This officer had been major and afterwards lieutenant-colonel of the Second Artillery in the War of 1812. The regiment was thus without a colonel for ten years.

In 1824 headquarters were removed to Governor's Island, and the greater part of the regiment was brought to New York Harbor. In the same year ten companies of artillery (two each of the 1st and 3d, three each of the 2d and 4th) were to be assembled at Fort Monroe and organized as a regiment under the name of "The Artillery Corps for Instruction." D, G and H were the companies of the 2d Artillery designated for this detail. These companies were to be relieved by others at regular intervals.

In the autumn of 1827 the regiment was ordered South, exchanging with the 1st Artillery. The new stations were at first Augusta Arsenal and Savannah, Georgia; Fort Marion, Florida; Forts Pike and St. Philip, Louisiana. In the order making the change it was stated that this was to be regarded as the beginning of a system of periodical changes. The southern tour was a long and active one. The stations of the companies were frequently changed on account of sickness, and for service in the Cherokee and Creek country, embracing portions of Georgia, Alabama, and Tennessee. About this time, too, the relations between the general government and the States of South Carolina and Alabama were somewhat strained. The recent tariff legislation was very unpopular in the South and "nullification" feeling, especially in the former State, ran high. So serious did things look that, in the latter part of 1832, Major Heileman, 2d Artillery, commanding in Charleston Harbor, was cautioned from Washington to be on the alert and hold the forts belonging to the United States against any force that might be brought against them. Seven additional companies, of the 1st, 3d, and 4th Artillery, were ordered to Charleston Harbor, and General Scott arrived to command in person and see that the laws of the United States were enforced. Happily, no collision occurred. A terrible fire breaking out in Charleston, General Scott ordered 400 men to the city, without arms, to assist in subduing the fire. They arrived just in time to relieve the exhausted citizens at the pumps. This action did much towards allaying the bitter feeling of the time.

In 1832 the Ordnance was separated from the Artillery. In the autumn of 1833 the action of the United States marshal in removing white settlers from lands ceded to the United States by the Creeks having aroused opposition on the part of the authorities of Alabama, a strong force of United States troops under Colonel D. E. Twiggs was sent to Fort Mitchell, on the eastern border of that State, to support him. The 2d Artillery was represented by A, B and C companies. The legislature passed laws giving State courts jurisdiction in this territory, and the State officers served writs on United States officers, the State courts adjudging them guilty of contempt in refusing to obey the writs. The Governor of Alabama went so far as to

threaten to raise an army of State troops and drive the Federal troops from the State. This, however, was not done, and the Federal and State forces did not come to blows. These events show the extent to which the doctrine of States' rights was believed in at the time.

According to the treaty made with the Seminole Indians, their removal to the West was to begin January 1, 1836. The actions of the Seminoles as that date approached led the authorities to suspect that the Indians would not act in good faith, and measures were taken to increase the military force in Florida and compel the Seminoles to fulfill their treaty obligations. Of the 2d Artillery, A, B, C and G companies were sent to Fort Brooke, Tampa Bay. H was there already. D was at St. Augustine, and F at Fort King, in the heart of the Indian country, about midway between St. Augustine and Fort Brooke. This being an important point, Major Dade, 4th Infantry, with C, 2d Artillery, and B, 3d Artillery, was ordered to march there from Fort Brooke. The command left Fort Brooke December 23. On the morning of December 28, as they were marching along a lake, they were attacked by Indians from the woods on the other side of the road. A moment before they were surprised Major Dade had said to his command, "We have now got through all danger; keep good heart and when we get to Fort King, I'll give you three days for Christmas." The fight lasted several hours, every officer and all but two of the men being killed. The officers of the 2d killed were Captain Gardiner, 2d Lieutenant Basinger, and Brevet 2d Lieutenant Henderson. The same day a detachment of the same band of Indians, under Osceola, came upon General Thompson, Indian agent, and Lieutenant Constantine Smith, 2d Artillery, who were out walking near Fort King, killed them both, and then attacked the fort, hoping to find the garrison (F, 2d Artillery) unprepared. The attack was unsuccessful.

December 29 General Clinch, who had not yet learned of the Dade massacre, had a fight with the Indians on the Withlacoochee River. His force was made up of detachments of the 1st, 2d and 3d Artillery. The Indians were defeated. D and F of the 2d took part in this action, losing one man killed and twelve wounded. On February 27 there was another fight on the Withlacoochee in which A, B, D, F, G and H were engaged.

Early in 1836 General Scott took command in Florida. His plan was to form three columns; one to operate from Volusia, on the St. John's River; one from Fort King or Fort Drane, and one from Fort Brooke. The latter was commanded by Colonel Lindsay, 2d Artillery. Of the 2d, A, B, G and H were in Colonel Lindsay's column. C, D, E and F were in eastern and central Florida, and were generally scattered at small posts. I was not sent to Florida until December, 1837. June 9, 1836, the Indians attacked Micanopy, commanded by Major Heileman, 2d Artillery. The attack was repulsed and the Indians driven two miles. D and E took part in the affair. Major Heileman, who was breveted lieutenant-colonel for his conduct in this action, died a few days later from the effects of over-exertion in the battle.

In August, 1836, the regiment was ordered, as soon as its services could be dispensed with, to the New England coast, with headquarters at Fort Wolcott, R. I. (now the navy Torpedo Station). Headquarters were estab-

lished at Fort Wolcott, remained there a few months, and then were returned to Florida, but the rest of the order was never carried out. Detachments of E and F were in the battle of Big Wahoo Swamp, November 21, 1836. February 28, 1837, the Indians attacked Camp Monroe, on Lake Monroe, but were defeated. In this action one sergeant and three privates of C were wounded and Captain Mellon was killed. C company, wiped out in the Dade massacre, had just been reorganized, and Mellon promoted to its command. September 11, 1837, a battalion of mixed troops, commanded by Lieutenant Peyton, 2d Artillery, surprised and captured two camps of Indians near Mosquito Inlet.

This meagre statement gives no idea of the hardships incident to service in this war. "The theatre of operations was a wilderness and every hammock and swamp a citadel for the enemy." The heat the greater part of the year was so intense that the troops could not make even ordinary marches. The men had often nothing but winter clothing. The water was bad, the food poor. No guides could be had and transportation was very difficult. General Jesup says, in his official report: "This is a service which no man would seek with any other view than the mere performance of duty. Distinction or increase of reputation is out of the question. The difficulties are such that the best concerted plans may result in absolute failure, and the best established reputation be lost without fault. If I have, at any time, said aught in disparagement of the operations of others in Florida, knowing the country as I now know it, I consider myself bound, as a man of honor, solemnly to retract it." In a little over two years 9 officers and 103 men of the 2d Artillery were killed in action, or died of wounds received or disease contracted in Florida. Many brevets were conferred on officers of the regiment for services in this war. The roster of lieutenants of the regiment in 1836-38 shows, among others, the names of John Sedgwick, C. F. Smith, E. D. Townsend, Henry L. Kendrick, A. A. Humphreys, James Duncan, Lewis G. Arnold, Edmund Schriver, Robert Allen, and Horace Brooks.

In the spring of 1838, after eleven years' service in the South, the regiment was put on the march for the Cherokee country in Alabama and Tennessee. A small part of the regiment went up the Mississippi and Tennessee rivers by boat, but the greater part was brought together on Black Creek, East Florida. The route was thence by water to St. Mary's, Savannah, and Augusta, and thence on foot to Ross Landing (where Chattanooga now stands), on the Tennessee River. The Cherokees were to be moved West, and, as trouble with them was anticipated, a large force of regulars, of which the 2d formed a part, was collected in their country. The whole regiment was encamped at Ross Landing, and remained there while the Indians were being collected and sent West. About this time the "Patriot War" was raging in Canada, and as the "Patriots" had the sympathy of a large number of Americans along the border, troops were needed in that region to enforce neutrality and prevent aid and reinforcements going to the revolutionists from the American side. Accordingly, as soon as its duties in the Cherokee country were completed, the regiment was, in July, ordered to the Niagara frontier. On its march through Kentucky, it

camped at Lexington on ground owned by Henry Clay, who did all in his power for the comfort of the command. On reaching the Ohio River the regiment went by boat to Portsmouth, Ohio, and thence across the state by canal to Cleveland. Here the regiment separated, a battalion under Major Payne going to Detroit, while the rest of the regiment went down Lake Erie to Buffalo, where headquarters were established.

In 1838, another company, K, was added to the regiment, C. F. Smith becoming its first captain. Colonel Lindsay died September 15, and James Bankhead became colonel. Though some changes were made from time to time, eight companies were at headquarters during most of the time the regiment was on the Niagara frontier. As there was no fighting, the attention of the officers was devoted to bringing the regiment up to as high a standard as possible. There was great rivalry between the companies, and the spirit of emulation was still further increased by the presence over the border of some crack British regiments, whose officers worked in harmony with ours in defeating the schemes of the would-be liberators of Canada. In 1839 Secretary of War Poinsett ordered the establishment of a camp of instruction at Trenton, New Jersey; one company of each artillery regiment to be sent there and equipped as a battery of light artillery. A of the 2d was selected and went there under command of Lieut. (afterwards Captain) James Duncan, who made it so famous in the war with Mexico. Three months later it returned to Buffalo as a light battery. In August, 1841, the regiment left Buffalo by canal, headquarters and B, D and G going to Fort Columbus, A to Fort Hamilton, E to Fort Lafayette, F and I to Fort Adams, and C, H and K to Fort Monroe. These stations were occupied with but little change until the Mexican War.

A (Duncan) left New York Harbor in August, 1845, and C (McKenzie), I (Lowd) and K (C. F. Smith), left in September for Corpus Christi. Joining General Taylor's army, they marched with it on Matamoras. I was assigned to Fort Brown, took part in its defense, and was left in garrison there. C and K, as a part of the artillery battalion, and A were engaged at Palo Alto (May 8) and Resaca de la Palma (May 9). Duncan by his brilliant advance and attack, without orders, on the Mexican right at Palo Alto, did much towards winning the battle and was specially mentioned by General Taylor.

G (De Hart) and H (Swartwout) left New York in June and joined Taylor's army on the Rio Grande. On the march up the river, C was left at Camargo and H at Reynosa. A, C, G and K formed part of Worth's Division and with it took an important part in the taking of Monterey (September 20-21), Captain C. F. Smith commanding the storming party that led the attack on Federation Hill. When Taylor's army, previous to the battle of Buena Vista, was reduced to strengthen General Scott, all our companies in Mexico were brought to the sea-board. The rest of the regiment left New York for Mexico, and in March, 1847, the whole regiment, except E, which was sent to Fort Brown, was assembled before Vera Cruz. On the organization of the Army of Invasion the regiment was assigned to Worth's regular division. The reduction of Vera Cruz was largely the work

of the artillery, Col. Bankhead, the senior field officer, acting as chief of artillery, in command of the batteries.

The regiment took part in all the battles of the campaign, figuring most prominently and suffering the heaviest losses at Churubusco, Molino del Rey, and City of Mexico. Col. Bankhead going on detached service, the Lieut.-Colonel (Erving) being Superintendent of recruiting, and the Major (Monroe) being chief of artillery of Gen. Taylor's army, the regiment started on the advance under command of Capt. McKenzie. Major Galt, promoted to the 2d when a new major was added to each artillery regiment, arrived and took command before the battle of Churubusco. Capt. C. F. Smith, on leaving Vera Cruz, was given command of a battalion of light troops, consisting of K (his own) and I of the 2d and one company each of the 5th and 8th Infantry. This command he exercised with distinction throughout the campaign. B (Kendrick) was left at Puebla as part of the garrison, which successfully withstood a siege of 28 days by a vastly superior force. The conduct of Capt. Kendrick during this siege was spoken of by his commanding officer in the highest terms.

At Molino Del Rey Lieut. Armstrong was killed, Lieutenants Daniels and Shackelford were mortally wounded, and all the lieutenants of Duncan's battery (H. J. Hunt, Wm. Hays, and H. F. Clarke) were slightly wounded. At Chapultepec Capt. Horace Brooks commanded one of the siege batteries erected to prepare the assault. Capt. McKenzie led a storming party of volunteers from Worth's division and after the enemy fled from Chapultepec, took part in the pursuit up the causeway and in the action at the Garita San Cosme. In this action Capt. Brooks commanded what was left of the regiment and, jointly with a detachment of the 4th Infantry under Lieut. U. S. Grant, attacked and carried, after an obstinate resistance, a strong breast-work, turned the enemy's right, and pursued him from house to house. During this action it became necessary to advance a piece of artillery along the causeway, which was swept by the enemy's fire, against a breast-work. Lieut. Hunt, of Duncan's battery, was ordered to execute this duty. Advancing at full speed for 150 yards, with a loss of more than half his men, he accomplished his object and engaged the enemy muzzle to muzzle. Gen. Worth says, in his official report, "It has never been my fortune to witness a more brilliant exhibition of courage and conduct." Throughout the campaign Duncan's battery (A) was splendidly handled and made a brilliant record. The foot companies, though necessarily less conspicuous, contributed their full share to the fame achieved by the American armies in Mexico. Even the band took part in the fighting. They were trained as soldiers and served in the ranks with muskets in every battle, resuming their musical instruments in camp and garrison.

In December, 1847, two new companies (L and M) were added to each artillery regiment, too late, however, to take any part in the war. M was made a light battery. The regiment was now so reduced in numbers that C, G, K and L, were broken up temporarily and the personnel distributed among the other companies. In June, 1848, the regiment began its homeward journey. It was sent first to Fort Columbus, and was then distributed as follows: Headquarters, C and G to Fort Monroe; A. Fort McHenry; B

and D, Bedlow's Island; E, Fort Johnston, N. C.; F and I, Fort Moultrie; H, Fort Macon; K, St. Augustine; L, Augusta Arsenal; M (which had been dismounted), Savannah.

They were not allowed to rest long. In November, 1848, B and D were sent to St. Louis, thence, marching from Leavenworth, to New Mexico, where they remained until the autumn of 1857. B was stationed at Santa Fé and afterwards at Fort Defiance, which post was commanded for some years by Capt. Kendrick, who showed marked ability in his management of the Indians. D was stationed successively at Santa Fé, and Forts Union, Massachusetts, and Stanton. Both companies were out frequently after Indians and on exploring expeditions. D was in Loring's Gila expedition against the Apaches in 1857. In 1849, E, F, H, K, L and M were sent to Florida, this time to the region between the Indian and the Kissimmee rivers, where they were actively engaged in scouting and building roads. About the latter work the department commander, Twiggs, was very particular. He required the roads to be made in the most careful manner, and afterwards refused to allow brick and lime to be hauled over them, although greatly needed at an interior post, for fear of cutting them up. In November, 1850, four companies were sent up to Charleston on account of secession excitement, and returned to Florida early in 1852.

"M" (Hunt) was again made a light battery in 1853, and was sent from Charleston by water to Fort Smith, Ark., thence overland to Fort Washita, where it took station. In November of the same year headquarters went to Pensacola (afterwards to Fort Brooke) and all the regiment except the light batteries, the companies in New Mexico, and H (which went to Baton Rouge), was again in Florida. Major Munroe commanded in the Peninsula and Major Harvey Brown along the Caloosahatchie River. For the next three years the theatre of operations was mainly in southwestern Florida, between Charlotte Harbor, and Lake Okeechobee and the Everglades. The troops were again at their old work of building roads and scouting. In 1855-56 the Indians became troublesome and there was considerable fighting. December 20, 1855, detachments of E, G, I, K and L had a fight near Billy's Town. On the same day Lieut. (afterwards Major-General) Hartsuff and a reconnoitring party were attacked by the Seminoles in the Big Cypress Swamp, and Hartsuff was badly wounded. January 18, 1856, C and L were engaged near Fort Deynaud and March 29 E had a fight at Chocaliska Key. April 7, 1856, a detachment of 3 officers and 108 men of the 1st and 2d Artillery, under Capt. Lewis G. Arnold, 2d Artillery, was attacked by a large body of Seminoles in the Big Cypress Swamp. The Indians were repeatedly charged and driven from the strong positions they successively held. August 2, 1856, E had another fight with the Indians at Punta Rasa.

The regiment suffered from yellow fever during this southern tour. In 1852 it broke out at Castle Pinckney, Charleston Harbor, and Capt. Roland and several men of M died. In 1854 yellow fever appeared at Baton Rouge and carried off Lieutenants Mebane and Burns (the only officers present) and the 1st Sergeant of H. It appeared there again the following year. Colonel Bankhead died at Baltimore, November 11, 1856. Mathew M.

Payne, formerly major of the regiment, became our next colonel, but he was Governor of the Soldiers' Home and never joined. On the resignation of Colonel Payne in 1861, John L. Gardner became colonel. He never joined, and was retired within a few months after his promotion, so the command of the regiment for nearly five years devolved upon the Lieutenant-Colonel, Justin Dimick, who was also, for much of that time, in command of the Artillery School at Fort Monroe.

In December, 1856, the regiment began to move North, headquarters going to Fort Hamilton, then in May, 1857, to Fort Monroe, and in November back to Fort Hamilton. C and L went to Fort Independence, E to Fort Ontario, F and I to Fort Monroe, G to Fort Lafayette, H and K to Fort Hamilton. B, D and M, on their arrival from the West went, B and M to Fort Monroe, and D to Fort Hamilton. Hardly were they settled in their new stations when several of the companies were ordered West, where most of them remained until 1861. A, E, F, H and M were occupied principally in Kansas, during the troublous *ante bellum* times in that State, with Leavenworth as a base. Headquarters were established at that post for a few months in 1859, going to Fort Monroe in November. It is worthy of note that one company (F) was sent to Lecompton in 1857 in search of a fugitive slave. The two light batteries started in May, 1858, to march from Leavenworth to Utah. They got some distance beyond Fort Kearney when, the Mormon troubles being over, they were recalled and returned to Leavenworth. During a part or all of the period from 1857 to the breaking out of the war, G, I and L were at one or the other of the northwestern posts, Brady, Snelling, Mackinac, Ridgely, and Ripley. E and H went out there before going to Kansas. During the John Brown excitement in 1859 B and a part of L, under Captain Carlisle, were sent from Fort Monroe to Harper's Ferry for temporary duty.

In pursuance of the seeming policy of the War Department, not to protect the national property in the South, but to guard it sufficiently to prevent its seizure by hot-headed secessionists before the plans of the leaders were ripe, D, E and F were, in 1860, sent respectively to the arsenals at Fayetteville, N. C., Augusta, Ga., and Little Rock, Ark. In due course of time the Southern States passed their ordinances of secession and each of the arsenals mentioned was given up to the State authorities, whose demands were supported by such a show of force that armed resistance was out of the question. Receipts for the public property were given and the officers and men were allowed to make their way, by certain specified routes, out of the South. Light Battery M (Hunt) was, in April, 1860, sent from Kansas to Fort Brown, Texas, and was part of the force that Twiggs tried some months later to turn over to the South. They had to leave their horses, but succeeded in getting out of the State by way of the Gulf with their guns, in spite of extraordinary efforts on the part of the Texans to get possession of them.

On the breaking out of the war Captains A. Elzey and S. S. Anderson, 1st Lieutenants A. Merchant, J. A. de Lagnel, and A. L. Long, and 2d Lieutenants J. P. Jones, W. Butler, and St. C. Dearing resigned and took part in the rebellion. Colonel Payne, who was a Virginian, also resigned in 1861.

In November W. W. Morris was promoted colonel and headquarters were moved to Fort McHenry, where they remained throughout the war. There was an unusual number of staff officers appointed from the 2d in 1861, and under the laws then in force they retained their regimental commissions. In December, 1861, for instance, there were nine officers of the Adjutant-General's, Quartermaster's and Subsistence Departments on the list of 1st lieutenants. Other officers were absent from their batteries exercising higher commands in the artillery service or in the volunteers. Add to these the number absent from ordinary causes and it will be seen that officers available for duty with their batteries in the field were very scarce. Batteries were generally commanded by lieutenants and sometimes not an officer belonging to a battery was present with it.

In the early days of the regiment it served as infantry; occasionally, in the Florida War, serving light field pieces. In the Mexican War the foot batteries served as infantry, and at Vera Cruz and Chapultepec served siege artillery. In the Civil War all the batteries in active service were mounted, and all those serving continuously with the Army of the Potomac became horse batteries. The armament at the beginning of the war was far from uniform, E Battery, for instance, at the first Bull Run having two 13 pdrs., two 12's, and two 6's. During the winter of 1861-62 the artillery of the Army of the Potomac was thoroughly organized by Gen. W. F. Barry, and when the army started for the Peninsula, the armament of each battery was uniform. In 1864 the horse batteries were reduced to 4 guns each, two 3-inch and two Napoleons.

The successive Chiefs of Artillery of the Army of the Potomac, W. F. Barry and H. J. Hunt, had been officers of the 2d until 1861. The first commander of the Horse Artillery Brigade, Wm. Hays, his successor, J. M. Robertson, and the first commander of the 2d Horse Artillery Brigade, J. C. Tidball, were all captains of the 2d. When all the horse artillery of the Army of the Potomac was, in 1864, consolidated into one brigade, the command was given to Capt. Robertson. This brigade organization was, however, apparently only for administrative purposes, batteries being detached for duty with divisions or brigades of cavalry, the whole brigade never acting together as a fighting unit under command of its chief. As there was no semblance of regimental organization, except on paper, during the war, it will be necessary to take each battery separately, and although their services were conspicuous, as shown by reports of commanding generals, the space allowed for this sketch permits little more than a mere enumeration of the battles in which they took part. These sketches follow in order.

"A" battery was the first to reach Washington, arriving in January, 1861. It formed a part of the expedition for the relief of Fort Pickens in April, but returned in time to take part in the first Bull Run. In September it was made a horse battery, the first in this country. In the spring of 1862 it went to the Peninsula, forming, with B and L (Robertson), and M. (Benson) of the 2d and C (Gibson) of the 3d, the famous Horse Artillery Brigade. At Yorktown during the siege it was in pursuit with Stoneman's cavalry after the evacuation, and was engaged at Williamsburg, New Bridge,

and Mechanicsville. It covered the withdrawal of the army from the left bank of the Chickahominy, being engaged at Gaines' Mill. It was engaged at Malvern Hill, July 1, and at Westover, July 3. While at Harrison's Landing a corporal died, and permission to fire the usual salute being refused, it occurred to Capt. Tidball to have "taps" sounded instead; whence the origin of this custom. The battery was with the rear guard on the withdrawal from the Peninsula. In the Maryland campaign it was in the advance with Pleasonton's cavalry, and was engaged at Boonsboro, Antietam, and Shepherdstown. It was with the cavalry in advance during the movement into Virginia, and was engaged at Piedmont, November 3, and Amissville, November 10. The battery was out with Averell's cavalry in April, 1863, and was engaged at Rapidan Station, May 1, and with Pleasonton at Upperville, June 20. It went to Gettysburg with Buford's cavalry, at which battle it fired the first shot, and after that battle was engaged at Williamsport, July 4, Boonsboro, July 8 and 9, and Funkstown, July 10. The battery, during September, was in action at Culpeper, Raccoon Ford, and Robinson River. In the campaign of 1864 the battery was engaged at Cold Harbor, Bottom's Bridge, Trevilian Station, and St. Mary's Church. While with the army before Petersburg it was several times detached on expeditions with the cavalry, being engaged at Deep Bottom, July 28, Lee's Mill, July 31, Deep Run, August 16, Vaughn Plank Road, September 29, Boydton Plank Road, October 27, Stoney Creek, December 1, and on the Weldon Railroad, December 7-11. The battery was engaged at Dinwiddie C. H., March 31, Farmville, April 7, and Appomattox, April 9. After Lee's surrender it started for North Carolina with Sheridan, returning when Johnston's surrender was known. The battery was commanded by Capt. Tidball until June, 1863; by Lieut. Calef at Gettysburg; by Lieut. Clarke until June, 1864; by Lieut. Dennison until February, 1865; then, until after the surrender, by Lieut. Lord.

B Battery left Fort Monroe in August, 1861, on the Hatteras expedition, and took part in the capture of Forts Hatteras and Clark. Reaching Washington in September, it was consolidated with L Battery, and early in 1862 was made a horse battery. The battery went with the army to the Peninsula. In front of Yorktown during the siege, it was with Stoneman's cavalry in pursuit after the evacuation. In this campaign the battery was engaged at Williamsburg, Slatersville, New Bridge, Mechanicsville, Gaines' Mill, and Malvern Hill. In the Maryland campaign the battery was with the advance on leaving Washington, and was engaged near South Mountain, at Antietam, and at Shepherdstown. The battery was in action at Halltown, October 3, and at Warrentown, November 6, and was opposite Fredericksburg, but not engaged, during the battle. The battery took part in Stoneman's raid in the spring of 1863, and was engaged at Beverly Ford June 9. It was under fire at Gettysburg, but was not engaged. It was engaged at Funkstown, July 9, Falling Waters, July 14, Chester Gap, July 22, Culpeper, August 1, Brandy Station, August 4, Morton's Ford, October 12, Brandy Station, October 13, Oak Hill, October 15, and Bealtown Station, October 26. In the campaign of 1864 the battery was in the battle of Todd's Tavern and took part in Sheridan's raids in May and June, fighting at

Yellow Tavern, Hanovertown, and Trevilian Station. It was also engaged at Deep Bottom, July 28. The battery went to the Valley in August, 1864, and was engaged at Newtown, Front Royal, Shepherdstown, Winchester, Milford, Waynesboro, Bridgewater, Cabin Hill, and Cedar Creek. It wintered at Pleasant Valley and remained there until it left for Washington after Lee's surrender. The combined battery was commanded by Capt. Robertson until October, 1862; by Lieut. Vincent until June, 1863; by Lieut. Heaton until August, 1864; thereafter by Lieut. Peirce.

C Battery went to Dry Tortugas in January, 1861, and to Fort Pickens in September. It was in action on Santa Rosa Island, October 9, and in the bombardment of Fort Pickens, November 21 and 22, and January 1, 1862. It went to Pensacola in May and to New Orleans in September. In December it was made a light battery and was sent to Baton Rouge. The battery took part in the Southern Louisiana expedition in April, 1863, and was engaged at Irish Bend, April 14. It took part in the siege of Port Hudson. After serving at various posts in the Department of the Gulf, but not actively engaged, it reached Washington in August, 1864, and remained in that vicinity until the close of the war. The battery was commanded by Capt. L. G. Arnold until March, 1862, thereafter by Lieut. J. I. Rodgers.

D Battery, after being obliged to leave Fayetteville Arsenal, reached Washington, was made a light battery, and participated in the first Bull Run. In the Peninsular campaign it took part in the capture of West Point, and was in the battles of Gaines' Mill, Glendale, and Malvern Hill. In the Maryland campaign it was engaged at Burkettsville and Antietam. It was in the battles of Fredericksburg in December, and Salem Church in May, 1863. At Gettysburg it was under fire but not engaged. After this battle it was detached from the 6th Corps, of which it had until now formed a part, made a horse battery, and assigned to Robertson's Horse Artillery Brigade. During the fall of 1863 it was actively employed with the cavalry, being in action at Raccoon Ford and Robinson River in September, Morton's Ford and Liberty in October, and Muddy Run in November. In the campaign of 1864 the battery was engaged at Todd's Tavern, and participated in Sheridan's raids in May and June, being engaged at Yellow Tavern, Matadequin Creek, and Trevilian Station. In August, 1864, the battery went to the Valley with Sheridan. It was in action in September at Milford and Luray. Returning to Pleasant Valley, it remained there until the end of the war. The battery was commanded at the first Bull Run by Capt. Arnold, 5th Artillery; in the Peninsula by Lieut. Upton, 5th Artillery; thereafter by Lieut. Williston.

E Battery reached Washington from Augusta Arsenal in February, 1861, was made a light battery, and took part in the first Bull Run. It went with the army to the Peninsula, and having heavy guns (six 20-pdrs.) garrisoned a battery at the siege of Yorktown. During the campaign it was in action at New Bridge, Golding's Farm, Turkey Bend, and Malvern Hill. It was then attached to the 9th Corps, and was engaged at the second Bull Run and Chantilly. In the Maryland campaign it was in the battles of South Mountain and Antietam. On the march through Virginia it was engaged at Warrenton Springs, November 18, and at Fredericksburg occupied the right

of the artillery line on the north bank. The battery was sent West in April, 1863, and took part in the sieges of Vicksburg and Jackson, Mississippi. It was sent back to Kentucky in September, and to Knoxville in October. The battery was engaged in the operations around Knoxville in November and took a conspicuous part in the successful defense, against a greatly superior force, of Fort Sanders, which terminated the siege. The battery came East with Burnside in April, 1864, and was in the battle of the Wilderness, after which the battery was sent to Washington, and was not again in active service during the war. The battery was commanded until August, 1862, by Capt. Carlisle, and during the rest of its active service by Lieut. Benjamin.

F Battery, after being obliged to give up Little Rock, went to St. Louis, was made a light battery, and took part in the capture of Camp Jackson and in the operations in Missouri under Lyon and Pope. It was engaged at Booneville, June 3, and Wilson's Creek, August 10, 1861, and in the capture of New Madrid, March, 1862. The battery crossed the Mississippi in April and was engaged at Farmington and in the operations around Corinth in May. It took part in the advance on Iuka in September but was not engaged, and in the battle of Corinth, October 4. The battery was engaged at Town Creek, Alabama, in April, 1863, and was then sent to Memphis, where it remained until October. The battery took part in the Atlanta campaign, being engaged at Resaca, Dallas, Kenesaw Mountain, and Ruff's Mills. During the battle on the Chattahoochee, July 22, the battery was ordered to another part of the line. In obeying the order, and while moving unsupported through a wood, the entire battery, the officers, and part of the men were captured. The remnant of the battery served a 4 1-2 inch siege gun in the siege of Atlanta. The battery was reorganized and sent back to Nashville, being in position during the battle. The battery was stationed thereafter at Nashville, Bridgeport, and Chattanooga until August, 1865. It was commanded by Capt. Totten in the first part of 1861, by Capt. Molinard for a few months in 1863, by Lieut. Murray from July, 1863, until July, 1864, and the rest of the time by officers not belonging to the regiment.

G Battery reached Washington from Mackinac in May, 1861, was made a light battery, and took part in the first Bull Run. In the Peninsular campaign it was attached to the 3d Corps and was in the battles of Glendale and Malvern Hill. It went into Maryland with Couch's Division but was not actively engaged. After Antietam the battery was attached to the 6th Corps and was in the battle of Fredericksburg in December, and in the battles of Fredericksburg and Salem Church, May 3 and 4, 1863. It was in action on the Rappahannock, June 15. The battery reached Gettysburg with the 6th Corps, July 2, but was not actively engaged. After this battle it was made a horse battery and assigned to Tidball's Horse Artillery Brigade. Crossing the Potomac, it was actively employed with the cavalry in Virginia in the fall of 1863, being engaged near Culpeper, September 13, and near the same place November 8. In the latter action, Lieut. J. H. Butler, commanding the battery, received a wound, necessitating amputation of the leg. The battery was in action at Burnett's Ford, February 7, 1864, and at Cold Harbor, May 31 and June 1. In June the battery was dismounted and

sent to Washington, having no more active service during the war. The battery was commanded at the first Bull Run by Lieut. O. D. Greene; until March, 1862, by Capt. Thompson; until November, 1863, by Lieut. Butler; and thereafter, until dismounted, by Lieut. Dennison.

H Battery reached Washington from Leavenworth in February, 1861, and arrived at Fort Pickens in April. It was in action on Santa Rosa Island, October 9, and in bombarding enemy's works November 22, 1861, and January 1, 1862. The battery remained at Pickens and Barrancas until May, 1864, when it went North, and was thereafter stationed, with the exception of two months in New York Harbor, at Fort McHenry until the regiment left for California. The battery was commanded during most of the war by Capt. Larned.

I Battery arrived at Fort McHenry from Fort Ridgeley in April, 1861, and remained there until May, 1864, when it went to Washington. It was engaged in the defenses of Washington July 11, 12, and 13, 1864. In April, 1865, the battery went to Alabama, as infantry, and to Chattanooga in June, returning East in August. The battery was commanded by various officers, generally by the regimental adjutant.

K Battery arrived in Washington from Plattsburgh in February, 1861, and went from there to Fort Pickens in April. The battery was engaged in the bombardment of November 22, 23, and 24, 1861, and January 1, 1862. The battery remained there until May, 1864, when it went to Fort Hamilton. It went to Fort McHenry in August, and remained there and at Fort Federal Hill, Baltimore, until the regiment went to California. The battery was commanded by Capt. Allen until 1863, then by Capt. Smalley.

H, I and K batteries had no service as light batteries during the Rebellion.

L Battery went from Fort Monroe to Washington in September, 1861, and was consolidated with B Battery, already mentioned.

M Battery, after getting out of Texas, went to New York and thence to Fort Pickens, whence it returned and took part, as a light battery, in the first Bull Run. It was made a horse battery in November and took part in the Peninsular campaign. After the evacuation of Yorktown, the battery went in pursuit with the cavalry, being engaged at Williamsburg and Hanover Court House. It was engaged at Malvern Hill, July 1 and August 5, Captain Benson being mortally wounded in the latter battle. In the Maryland campaign the battery was in advance with the cavalry and was engaged near South Mountain and at Antietam. It was in pursuit after the battle, fighting at Martinsburg, October 1, and at Nolan's Ford, October 12, after making a march of 80 miles in a little over 24 hours. Crossing the Potomac, it was engaged with the cavalry during November at Purcellville, Philmont, Upperville, Barbee's Cross Roads and Amissville. At Fredericksburg the battery was in reserve. The battery took part in Stoneman's raid in the spring of 1863, and was engaged at Beverly Ford, June 9. In the Gettysburg campaign the battery was engaged at Hunterstown and Hanover, and on the right at Gettysburg, July 3. After the battle the battery was in pursuit, fighting at Monterey, Smithsburg, Williamsport, Boonsboro, Hagerstown, and Falling Waters, and at Battle Mountain, Va., July

24. It was engaged at James City, Brandy Station, and Buckland Mills in October, and at Raccoon and Morton's Fords in November. In the campaign of 1864 the battery was engaged at Craig's Meeting House, May 5, and at Todd's Tavern, and took part in Sheridan's raids in May and June, being engaged at Meadow Bridge, Strawberry Hill and Trevilian Station. The battery went to the Valley in August, and was engaged at Summit Point and Kearneysville in August, at the Opequan in September, and at Lacy's Springs in December. The battery wintered at Pleasant Valley. One section remained there until the close of the war. The rifle section (Lieut. Woodruff) left in February with Sheridan to join the Army of the Potomac, and was engaged at Waynesboro, Dinwiddie Court House, Five Forks, Namozine Church, Sailor's Creek, and Appomattox. The battery was commanded at the first Bull Run, by Maj. Hunt, in the Peninsula by Capt. Benson until mortally wounded in August, until September by Lieut. Hains, until September, 1864, by Lieut. Pennington, and thereafter by Lieut. Woodruff.

The following officers of the regiment were killed during the war: 1st Lieut. John T. Greble at Big Bethel, June 10, 1861. 2d Lieut. Presley O. Craig at the first Bull Run. 1st Lieut. Guilford D. Bailey, Chief of Artillery of Casey's division, at Fair Oaks, May 31, 1862. Capt. Henry Benson died August 11 of wound received August 5, 1862, at Malvern Hill. 2d Lieut. Samuel D. Southworth at Cedar Creek, October 19, 1864. 2d Lieut. Thomas Burns at Hatcher's Run, October 28, 1864. 1st Lieut. Albert M. Murray, captured near Atlanta, July 22, 1864, died in a rebel prison three weeks later.

The regiment was assembled at Fort McHenry in August, 1865, and sailed from there for California via the Isthmus, under command of General W. H. French, the lieutenant-colonel. Arriving at San Francisco in September the batteries were at first distributed among the posts in the harbor, with headquarters at the Presidio. In October two batteries (C and L) were sent to the mouth of the Columbia and one (I) to San Juan Island, which, pending the settlement of the boundary question, was occupied jointly by the United States and Great Britain.

General Morris died at Fort McHenry, December 11, 1865, and W. F. Barry became colonel. General Barry remained on detached service in the East and when the Artillery School was started again he was assigned to its command, which he retained until 1877, General French meanwhile commanding the regiment.

On the purchase of Alaska from Russia, United States troops were sent there, and during part of the Pacific Coast tour of the regiment portions of it garrisoned Sitka, Kodiak, Tongass, Wrangell, and Kenai, beside furnishing detachments to enforce the seal fishery regulations on St. Paul's and St. George's Islands in Behring Sea. Batteries C, E, F, G, H and I had Alaska service. In July, 1868, Battery F, Lieut. McGilvray, while seeking a suitable site for a post on Cook's Inlet was shipwrecked. All the property and records, but no lives, were lost. Battery K was sent to Fort Monroe in November, 1867. In the spring of 1869 an order was issued dismounting Battery M and sending Battery A to Fort Riley, where a light artillery

school was ordered established. Indian troubles prevented the plans for the school from being carried out, the batteries were called upon to go into the field as cavalry, and in May, 1871, the battery was sent back to the Presidio. Late in 1872 the regiment (except C and H, which followed in January, 1873) came East. Headquarters and A, C and H went to Fort McHenry; B to Fort Foote; and the other batteries to posts in North Carolina. Detachments were sent out from time to time, principally from F, at Morganton, after moonshiners.

In July, 1876, after the Custer massacre, C, G and H were sent to Indian Territory and I, to Fort Dodge, Kansas. In September D, L and M were sent to into South Carolina for duty in connection with the approaching election. The unsettled state of affairs arising from this election resulted in bringing to Washington the batteries that had gone West, and later the batteries from the Carolinas, except M, which was left at Fort Johnston. Batteries A, C, D, G, I and L took part in the inauguration of President Hayes.

The whole regiment was out during the labor riots of 1877. Batteries C, D, E, F, G, H, I and L, and a detachment of A, all under command of General French, arrived at Martinsburg on the morning of July 19, and were occupied for the next month along the Baltimore and Ohio Railroad, opening the road for traffic and protecting property. A was on duty at Camden Station, Baltimore, for a few days in July. B, K and M were sent out on the Pennsylvania Railroad and were for some time at Pittsburgh. In August, the troubles on the railroads being over, most of the regiment was brought together at Fort McHenry, whence a battalion, consisting of E, F, G and L, was sent, the last of August, to reestablish the post of Carlisle Barracks. After remaining there three weeks, disturbances having occurred in the coal regions, they were sent to Wilkesbarre, where they were joined by Battery C from McHenry. There were also in camp there most of the 2d Infantry, five batteries of the 5th Artillery, and Sinclair's light battery of the 3d. In October all the batteries of the regiment were again at their regular stations.

In December, trouble with Mexico being thought probable, the four Carlisle batteries were sent to San Antonio, Texas. In January, 1878, L was made a light battery, F was afterwards made a machine-gun battery, and horses and Gatlings, but not a full equipment, were temporarily issued to E and G. In May Battery F, part with guns and horses and part as infantry, and a platoon of Battery L went to Fort Clark, and in June accompanied General Mackenzie on his expedition into Mexico. Battery I having been sent from Fort Foote to Fort Ontario, the regiment was now scattered literally from the Canadian to the Mexican border.

General Barry died at Fort McHenry, July 18, 1879, and Lieut.-Colonel Romeyn B. Ayres, 3d Artillery, became colonel.

In October, 1880, Battery L was dismounted and after several changes arrived at Fort McHenry. Battery F was designated a regular light battery in November, and after some changes of station finally settled at Leavenworth. E and G went to Fort Brown in December, 1879, and a year later to Arkansas. In January, 1881, headquarters went to Washington

Barracks, where one or more batteries had been stationed since 1877. This became a five-battery post, and three batteries were left at McHenry, Forts Foote, Ontario, and Johnston, no longer being garrisoned by the regiment.

After the shooting of President Garfield in July, 1881, the regiment furnished guards at the White House until after the removal of the President to Elberon in September, and at the jail until after the execution of Guiteau. In September a detachment under Lieut. Weaver accompanied the President's remains to Ohio.

In June, 1885, the regiment was ordered South, exchanging with the 3d. Headquarters, G and L went to St. Augustine, and B and H to Fort Barrancas, Florida; C and D to Mt. Vernon Barracks, Alabama; I and M to Jackson Barracks, Louisiana; A joined E at Little Rock Barracks, Arkansas. In the summer of 1888 yellow fever was prevalent in the South and the garrisons of St. Augustine and Barrancas went into camp near Huntsville, Alabama. K and M from Jackson Barracks (Battery I having replaced K at Fort Monroe) were sent in September to Fort Wadsworth, New York Harbor, by sea, and were replaced in December by Battery E from Little Rock.

General Ayres died December 4, 1888, in the village of Fort Hamilton and Lieut.-Colonel John Mendenhall, 4th Artillery, became colonel.

In May, 1889, the regiment came to the New England coast, exchanging with the 4th. Headquarters, C, G and H went to Fort Adams; E to Fort Preble; B and D to Fort Warren; L to Fort Trumbull. A went from Little Rock to Fort Riley, marching through Arkansas and Indian Territory. In May, 1890, K and M were transferred from Wadsworth to Fort Schuyler, and in November, 1891, Light Battery F changed from Leavenworth to Fort Riley. In April, 1892, the Schuyler garrison was changed, K and L, and H and M, interchanging stations.

Colonel Mendenhall died at Fort Adams July 1, 1892, and Lieut.-Colonel Richard Lodor, 1st Artillery, became colonel.

The whole regiment, since its organization in 1821, has been together but twice,—in 1838 and in 1865, and then only for a short time, and it is to be regretted that there is no prospect of its soon being together again. At present, besides furnishing garrisons for five posts, it has batteries at two other posts, and the same has been true for the past eight years.

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Gold Medal, Germany, "Massive," 1877.

Gold Medal, Exposition Universelle Internationale de Paris, 1878.

Silver Medal, Austria, 1879.

Gold Medal, Royal Agricultural Society, London, Eng., 1879.

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Both Gold and Silver Medals, The International Health Exhibition, London, England, 1884.

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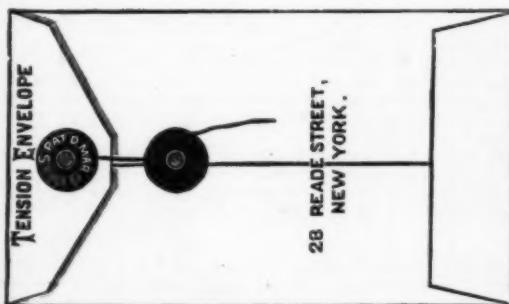
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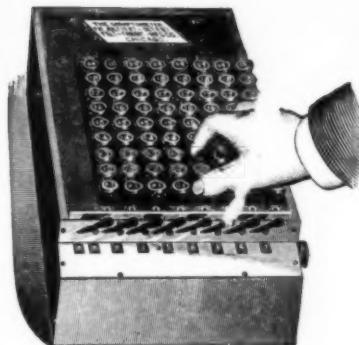
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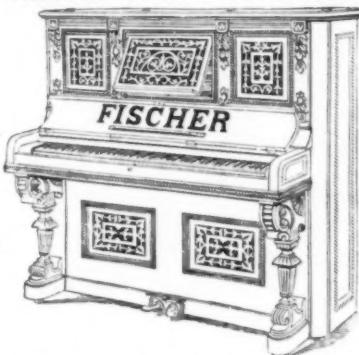
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